

15th Annual International College of Performance Management Conference



May 2-5, 1999, St. Paul, Minnesota

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Raytheon

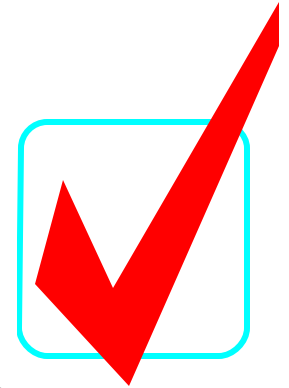
Raytheon Systems Company

Integrated Baseline Review

Arthur D. Anderson

3 May 1999

IBR Spectrum



**System Audit
“SAR”**

“Check the Block”

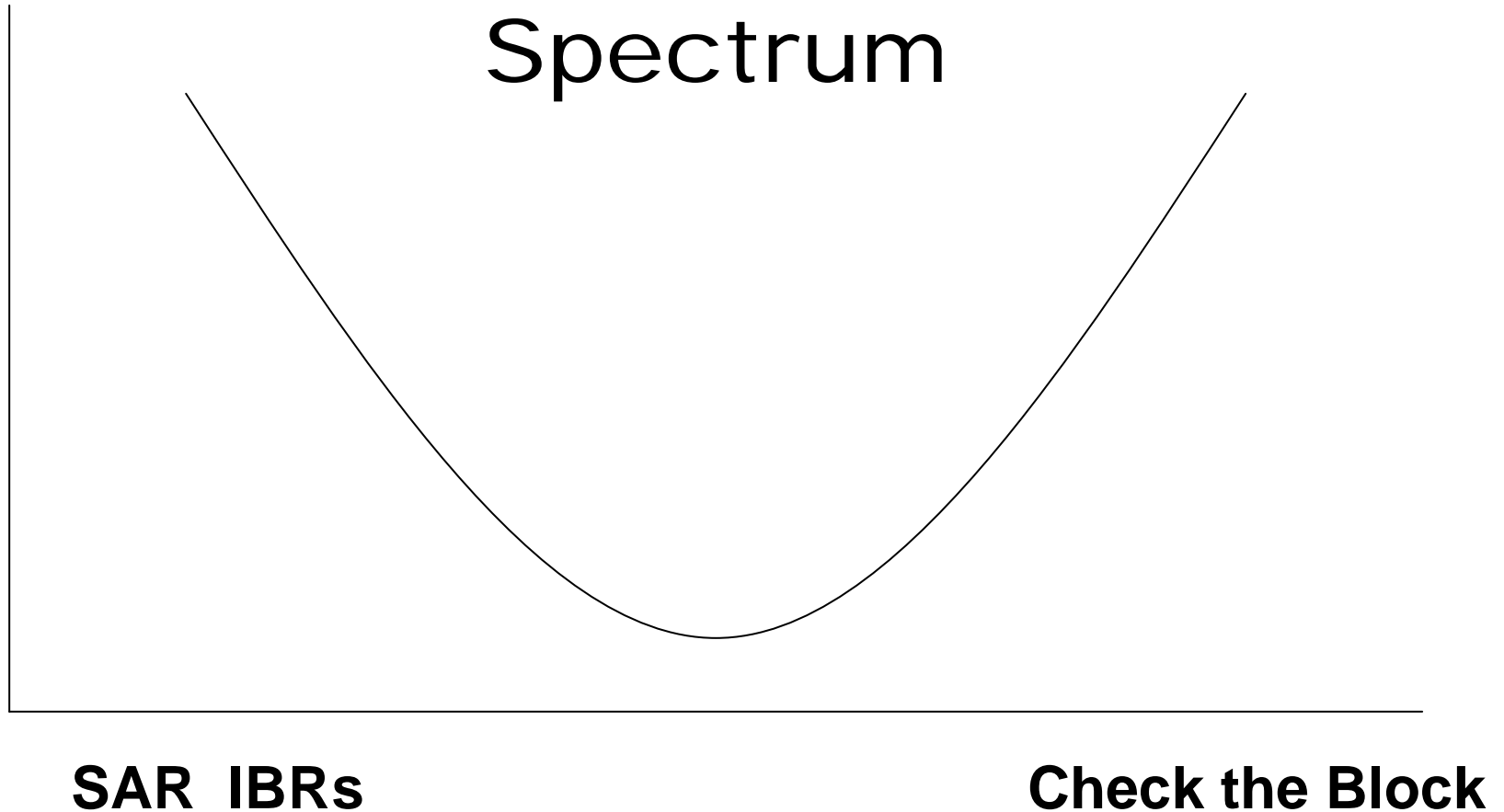
IBR “SAR”

- **At one end of the spectrum is the IBR “SAR”**
- **It carries the IBR name but:**
 - **It is run by the C/SCS cultists or consultants**
 - **It is System Description oriented**
 - **It is document oriented**
 - **It is trace oriented**
 - **It is a SYSTEM REVIEW**

IBR “Check the Block”

- At the other end is the “Check the block”
- It carries the IBR name but:
 - There is no real check of the contract scope of work tie to the program plan
 - There is no real check of the schedule’s major interdependencies
 - There is no real check of the a realistic resource allocation
 - There is minimal reaction to identified risk

Current Status Against The Spectrum



What Is Needed

- **IBR early in program**
 - **If there is a delay, it generally is a warning sign**
 - **Delays cost money**
 - **Contractor hasn't had time to get ready**
 - **IBR approach incorrect**
- **Critical in-depth review of the plan**
 - **Good for customer**
 - **Good for contractor**
 - **Focus on content not grammar**

Improvements - Possible Step Approach for IBR

- Identify plan (IMP)
- Identify schedule (IMS)
- Investigate resource loading
- Investigate performance measurement approach
- Investigate communication approach
- Investigate baseline control
- Investigate forecasting
- Risk identification
- Expectation leveling

Identify Plan

- **What are contract requirements**
- **What are customer expectations based on proposal/negotiations**
- **How has contractor ensured the explicit and implicit requirements are met**
- **How has contractor integrated any subcontractors in the plan**
- **Where is the risk in the plan (technical)**

Identify Schedule

- **Are tasks identified to support the plan (including subcontractors)**
- **Are the tasks logical and provide continuity**
- **Are the tasks identified to an organization**
- **Are the needed interdependencies identified between tasks**
- **Where is the risk in the schedule**

Investigate Resource Loading

- Are the labor and material estimates consistent with the associated tasks (including subcontractors)
- Is the organization staffing consistent to their tasks' estimates
- Are the rates (labor, overhead, etc.) appropriate for the organization
- What resource (cost) risks are there

Investigate Performance Measurement Approach

- **What portions of the plan are critical**
- **What techniques are used by the contractor and subcontractors to measure the performance on those portions of the plan**
- **What is the risk on the Performance Measurement approach**

Investigate Communication Approach

- **How does the contractor internally communicate programmatic items**
- **How is the contractor planning to communicate externally**
 - **Customer, vender, subcontractor**
 - **IPTs, functionally, weekly, monthly, etc**
- **How does the contractor link cost, schedule, risk and technical**

Investigate Baseline Control

- **Funding, Contract Mods, Re-planning, and OTBs**
 - **What are the processes and controls**
 - **What is linkage to plans, schedules and resources**
 - **What is impact on performance measurement**
 - **How are they communicated**
- **What is the risk in the Baseline Control approach**

Investigate Forecasting

- **How, who and when**
 - **Techniques, detail, and risk incorporation**
 - **Engineering, manufacturing and subcontractors**
 - **How often, cycle time, and thresholds for updates**
- **What is the risk in the forecasting approach**

Risk Identification

- **Identify the risks from above**
 - **Technical**
 - **Schedule**
 - **Cost**
 - **Performance Measurement**
 - **Communication**
 - **Baseline control**
 - **Forecasting**
- **How can the risks be mitigated**

Expectation Leveling

- **Customer expectations**
 - **Wants a Lincoln, contractor should be able to make a Sable**
- **Contractor expectations**
 - **Knows how to build an Escort, might be able to make a Taurus**

Challenge To All Of Us

- **An IBR is a joint effort**
- **A good IBR expands that joint approach**
 - **Contractor gains insights on their customer and receives a free health check**
 - **Customers gain insights on their contractors and gain assurance that there won't be any surprises**
- **Outcome can be a win-win situation for all**





AV-8B Integrated Earned Value Management System

**Presented to
College of Performance Measurement
15th Annual Conference
4 May 1999**

**Presented by
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Brief Contents



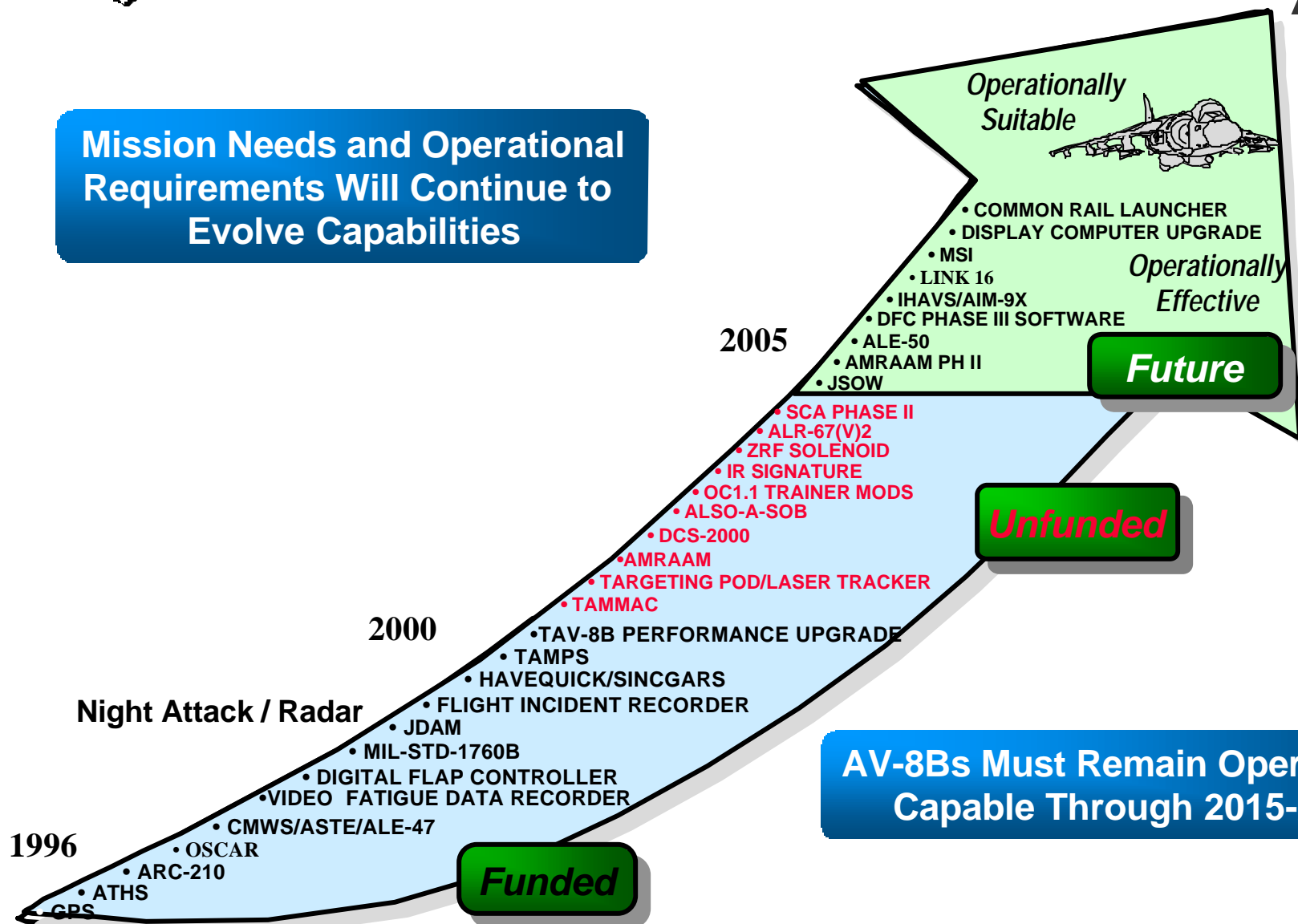
-
- OSCAR Overview
 - NAWC-WD/Boeing EVMS Overview
 - Bringing it all together - The IBR
 - Conclusions



AV-8B Operational Requirements



Mission Needs and Operational Requirements Will Continue to Evolve Capabilities



AV-8Bs Must Remain Operationally Capable Through 2015-2020+



Avionics Upgrades for Legacy Aircraft



- Legacy aircraft such as the Harrier are forced to remain operational well beyond their projected service life
- Modernization of existing avionics
 - Practical means of extending Harrier's service life
 - Leverage commercial technologies

Challenges of Avionics Modernization



■ Existing avionics computational capabilities

- ~~Existing architectures~~ are incompatible with available commercial technologies
- Limited computation throughput
- Input/output bandwidth limitations

■ Commercial technology advancements

- Military application of these technologies is hampered by acquisition process
- Legacy systems have tightly coupled hardware, software and support equipment which make upgrades difficult
- Commercial technology changes rapidly
 - Replacement of obsolete commercial parts may be a problem as they become obsolete much faster

System Engineering Approach



- **Overall system engineering approach is key to using open architectures for legacy upgrades**
 - **Plan to incrementally upgrade avionics suite as time and funding allow**
 - **Engineer immediate upgrade requirements**
 - **Design to allow for changes in the future**



What is an Open System Approach?



- Product performance and life cycle support drive engineering decisions
- Modular system design isolates the effect of component upgrades
- Use of commercial, widely used interface standards
- Buy rather than develop system components

Open Systems Benefits

- ~~State-of-the art~~ systems
- Systems fielded faster
- Easier technology insertion
- Increased vendor competition
- Reduced life cycle costs
- Better performance



Open Systems Risks



- Government has less control over outcomes -
Government is a consumer vice a designer.
- Open systems products may not provide the optimum design for modules, components, subsystems, and short-term solutions
- Building an open system takes time for:
 - Market Analysis
 - Prototyping
 - Standards selection
- Open systems Interface Standards extensions may cause problems later on in the system life cycle

Open System Core Avionics Requirement



- **Replace the existing AYK-14 Mission Computer configuration with PMA-209's Advanced Mission Computer**
- **Redesign and code the existing Mission Computer and Stores Management Computer functionality using:**
 - **Open Systems Architecture**
 - **Object-oriented Analysis and Design Methodology**
 - **C++ Programming Language**
 - **Commercial Software Development Tools**



NAWC-WD/Boeing Integrated EVMS Overview



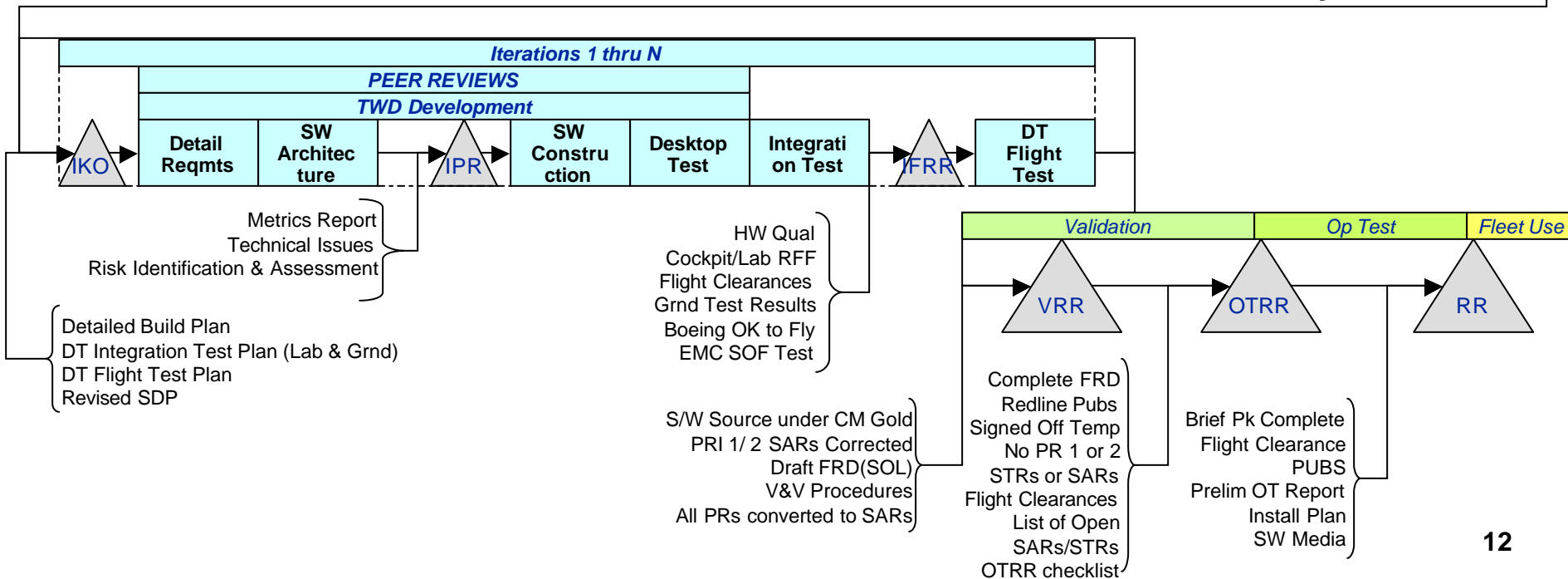
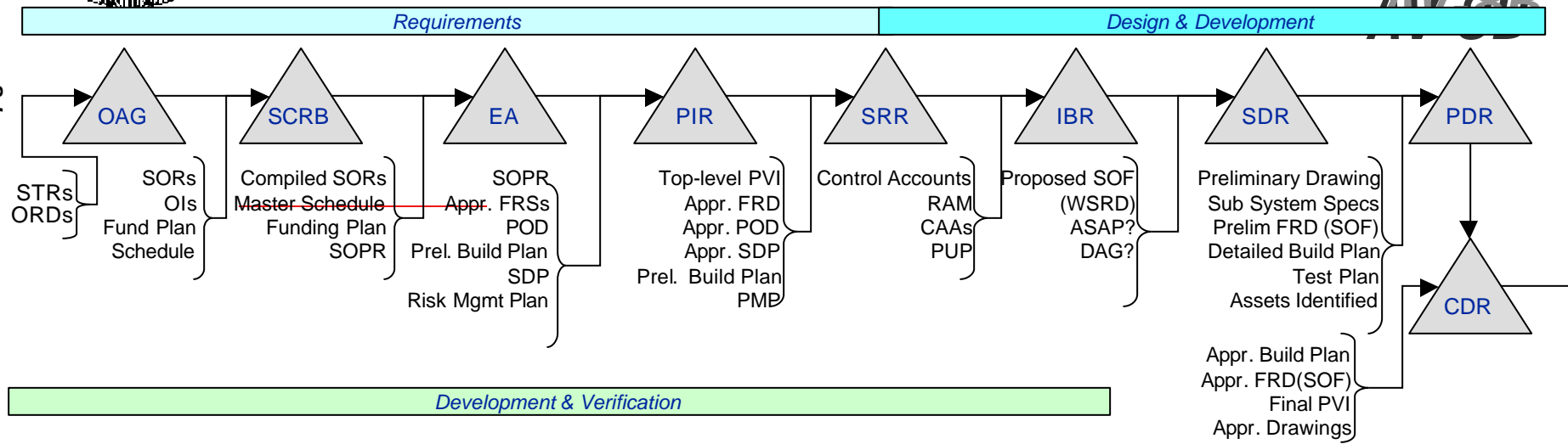
- **System Engineering Support Contract**
 - **Cost Plus Award Fee Contract**
 - **Contract specifies earned value and schedule data CDRLs**
 - Planning Data (Time phased budget data)
 - Status Data
 - VARs
- **Common WBS and WBS Dictionary**
- **BCR between organizations**



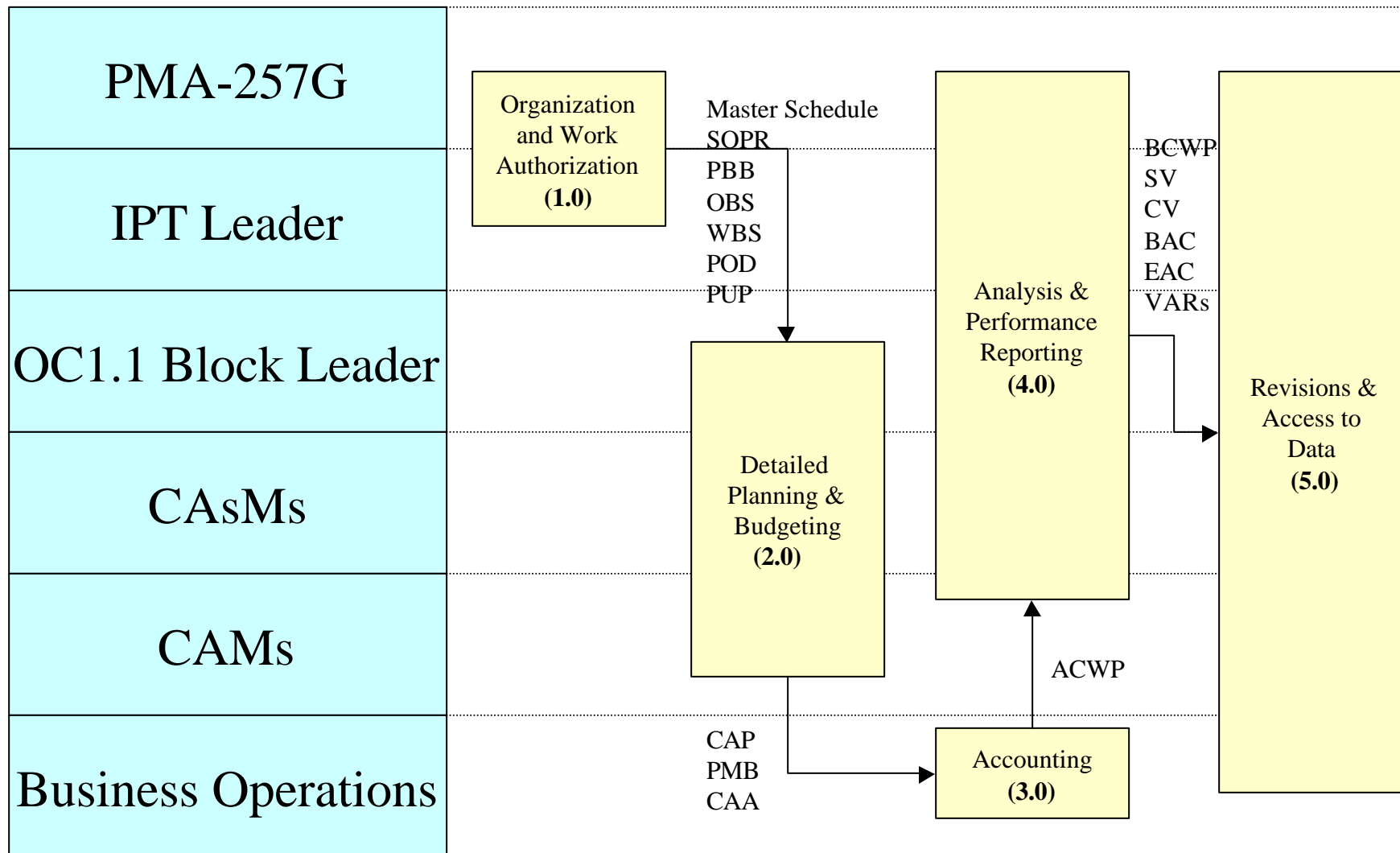
Block Upgrade Milestone Schedule



Potential Block Upgrades

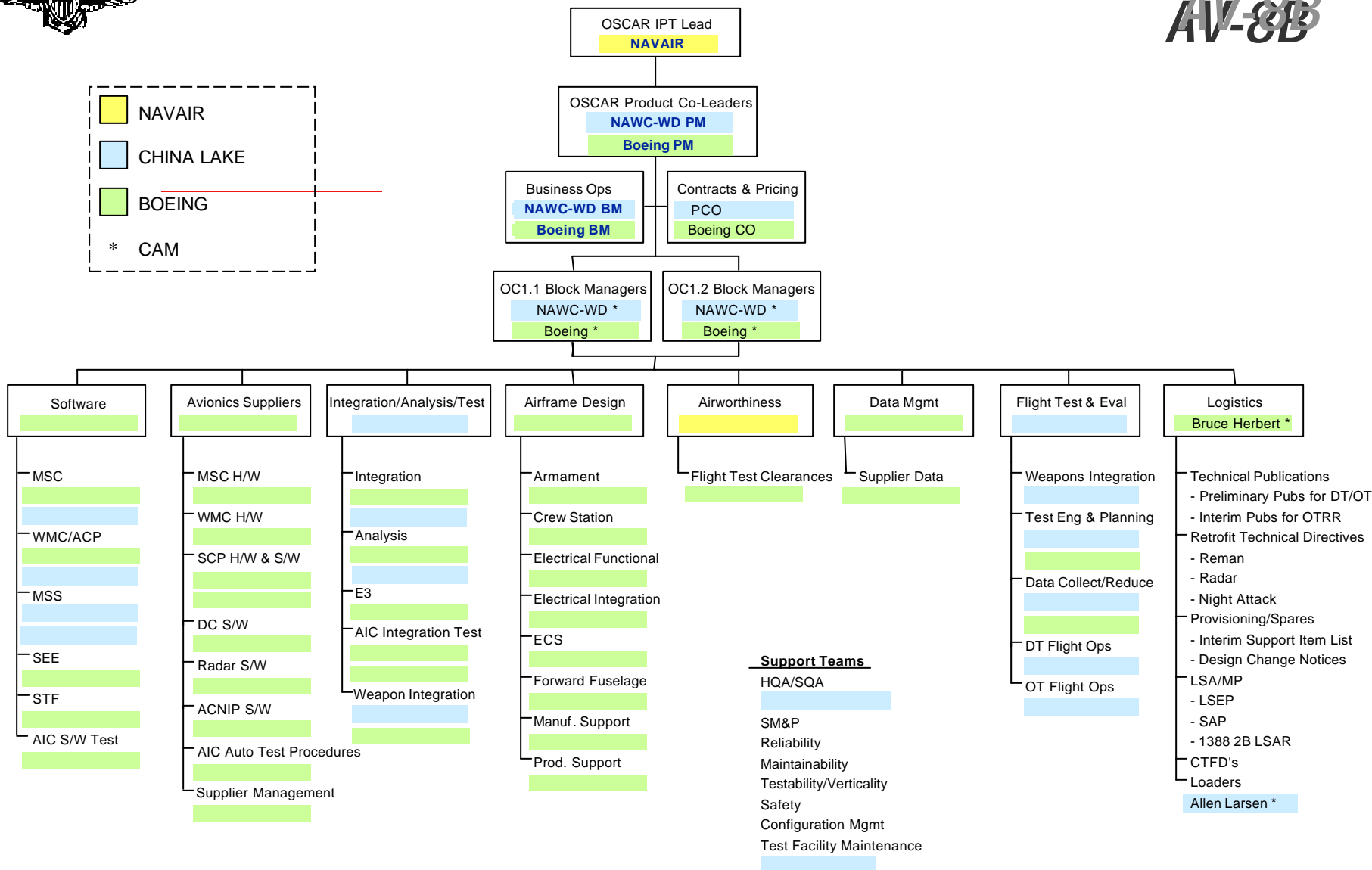
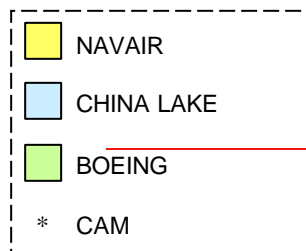


EVMS Process Overview

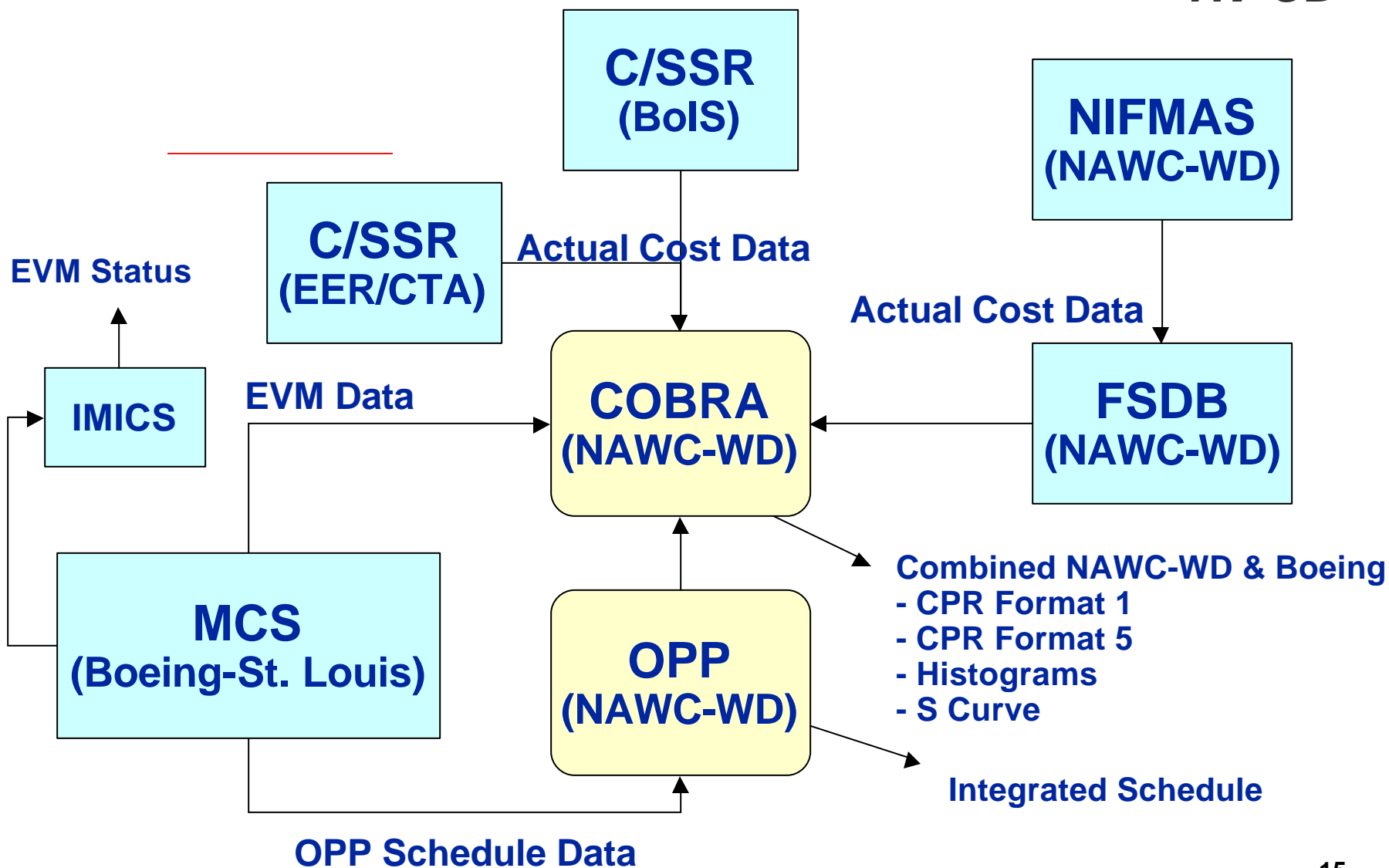




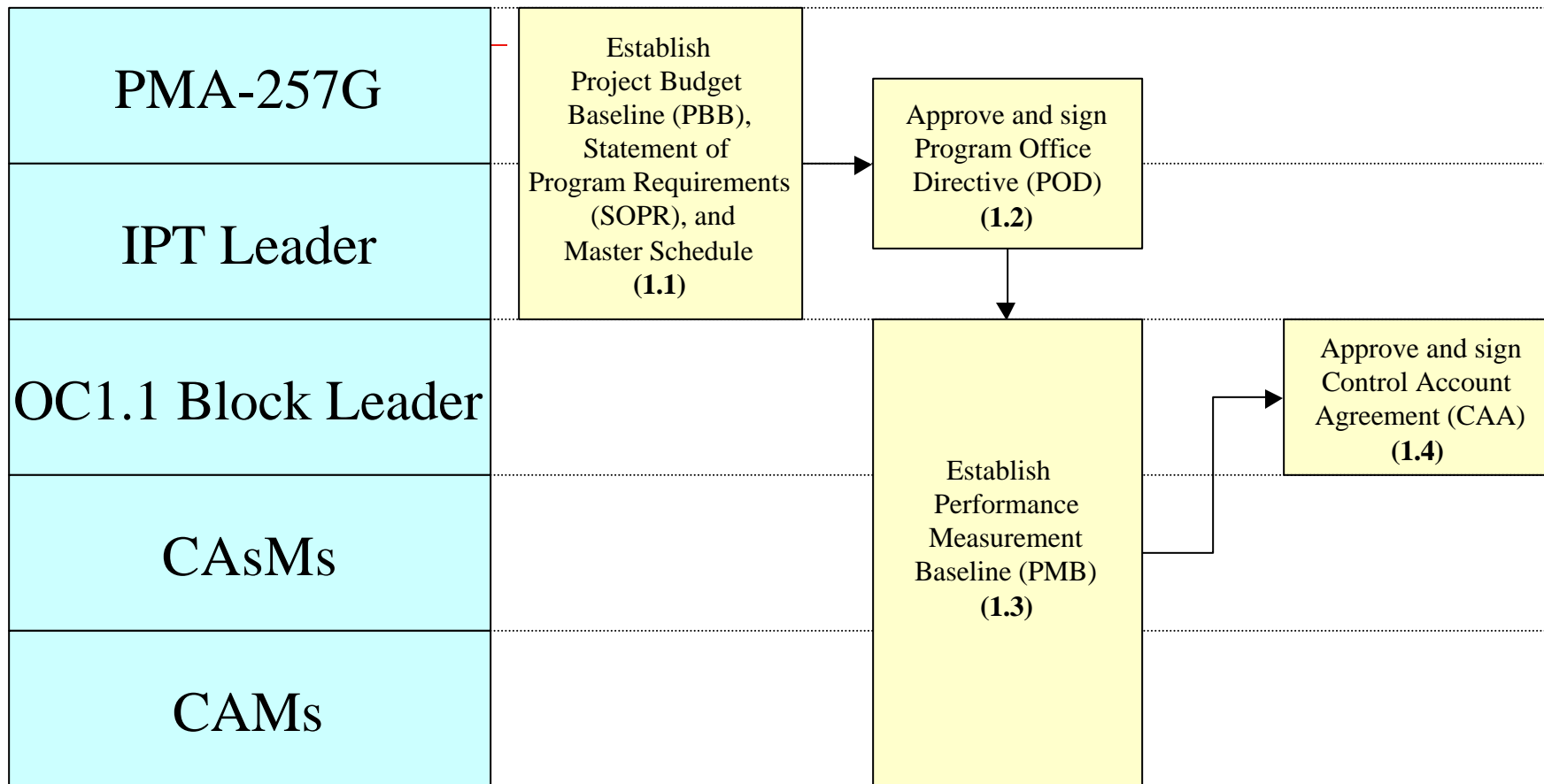
IPT Organization



EVMS Integration Overview



Work Authorization Process



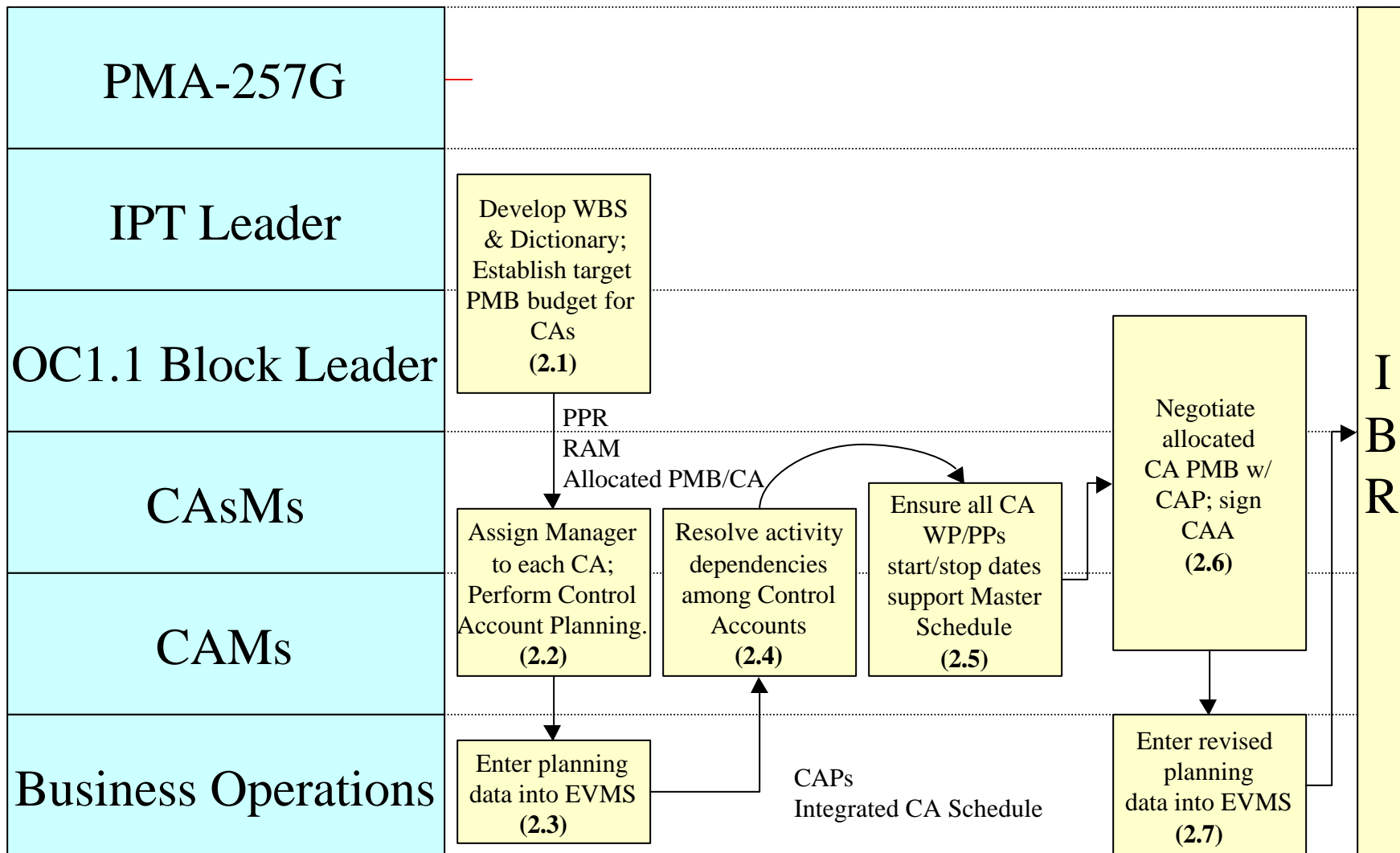


Program Office Directive Contents

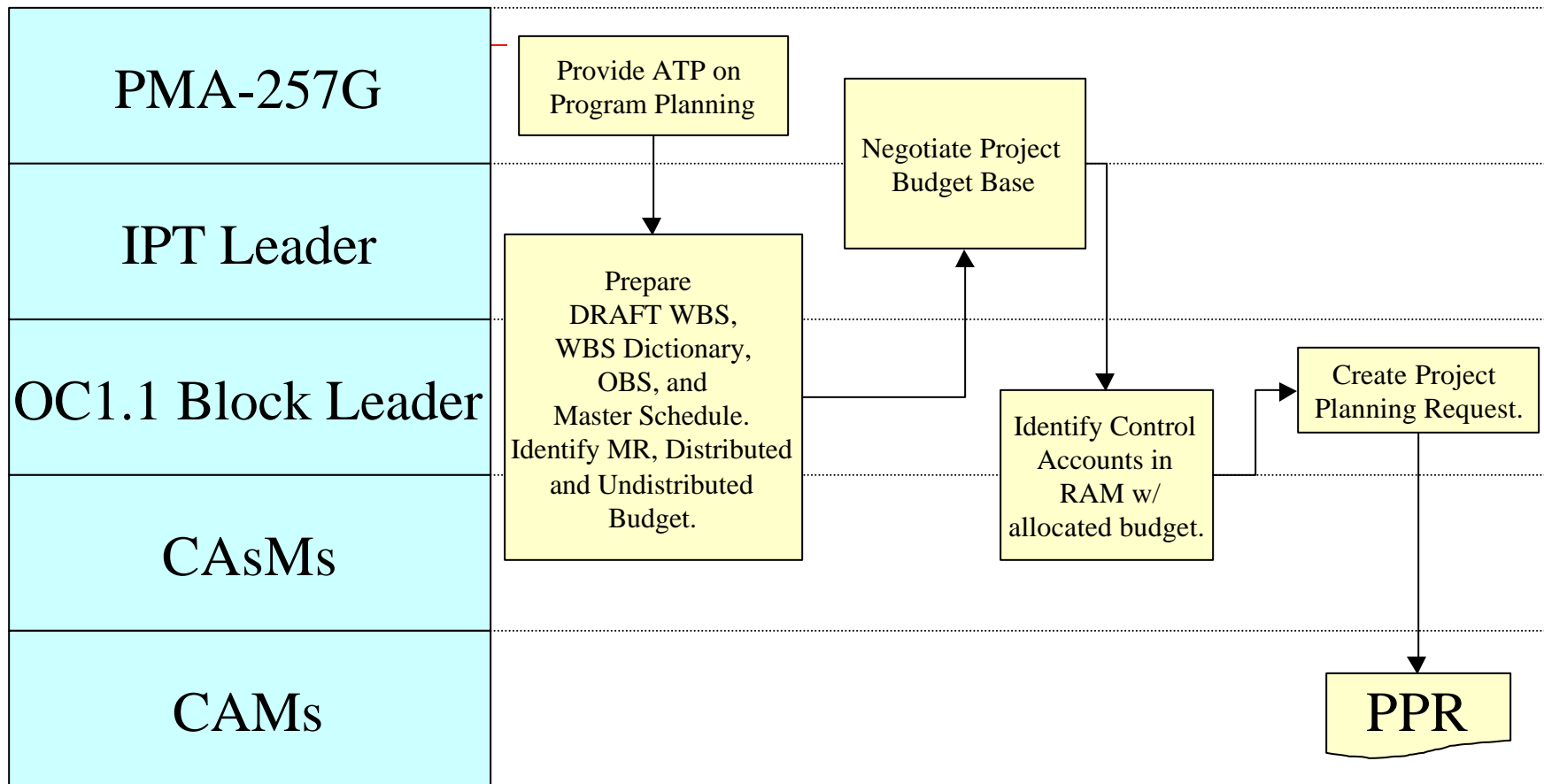


- Statement of Program Requirements (SOPR)
- Master Program Schedule
- Summary Program WBS Funding Plan
- Identification of Funding Sources
- Boeing Cost Plus Award Fee Contract Variance Analysis Threshold
 - \$100,000 or more and 10% of Sub-CLIN BAC

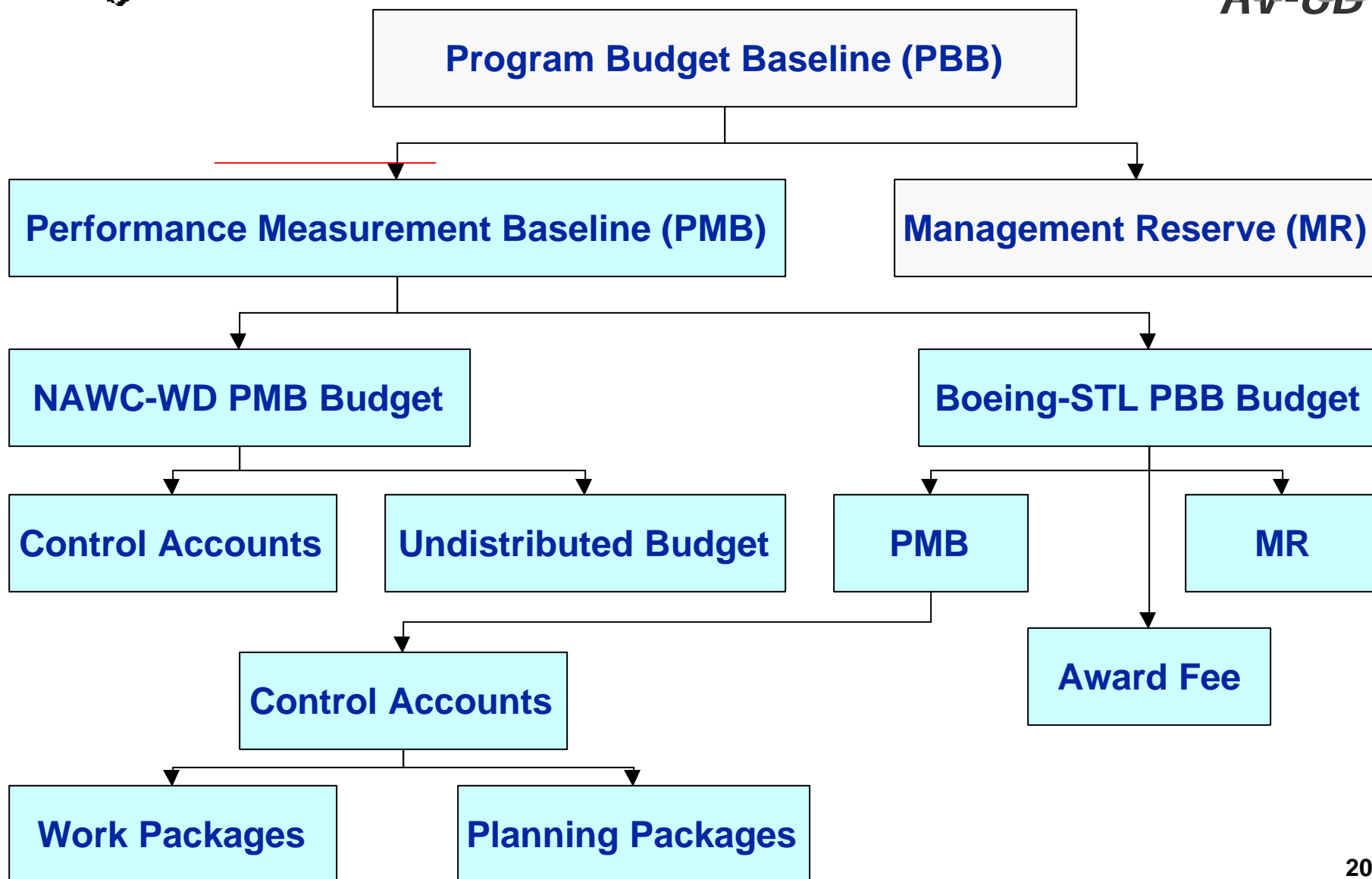
Detailed Planning & Budgeting



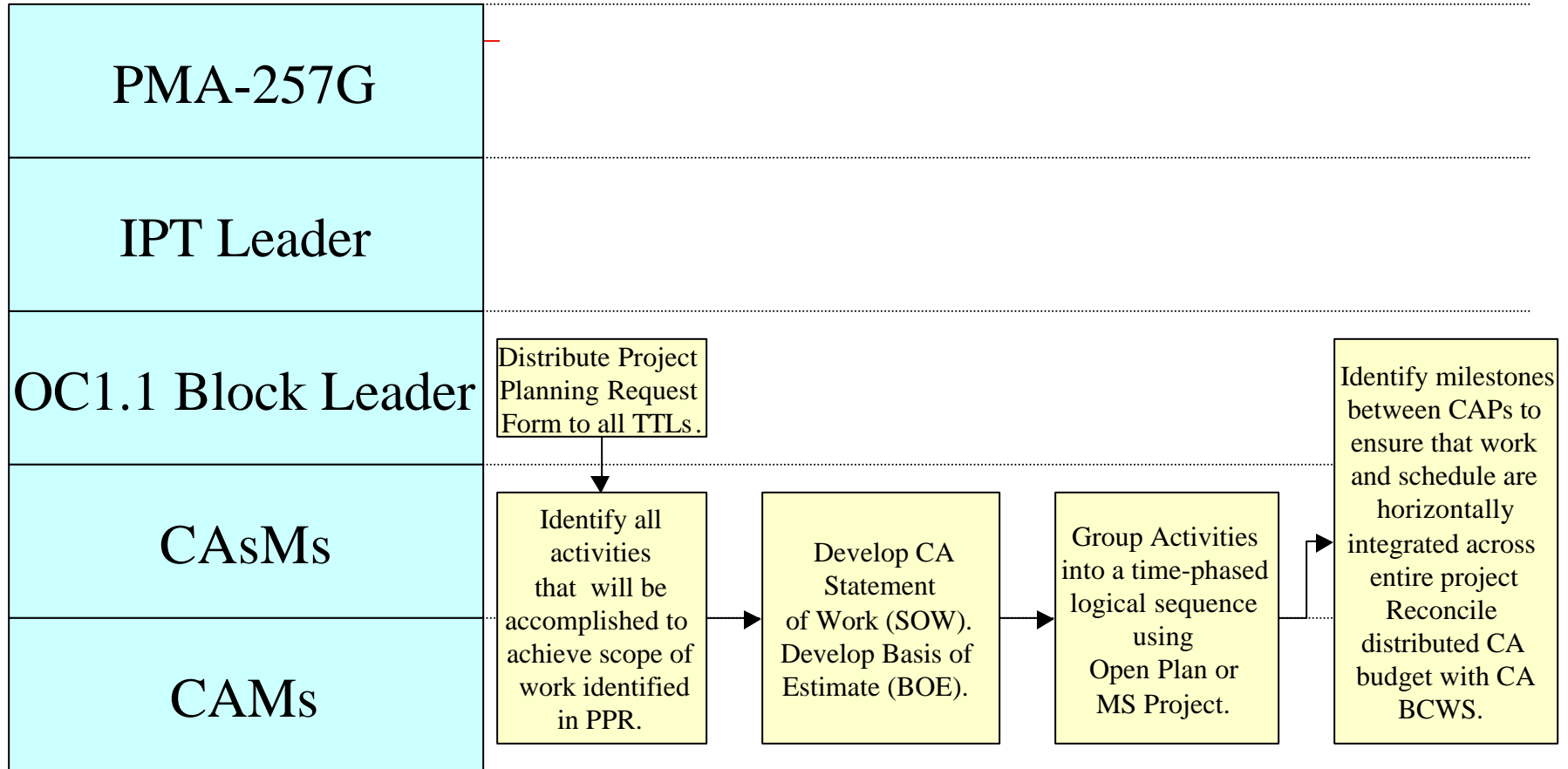
Establish Project Budget Base



OMNI OC1.1 PBB Distribution



Develop Control Accounts

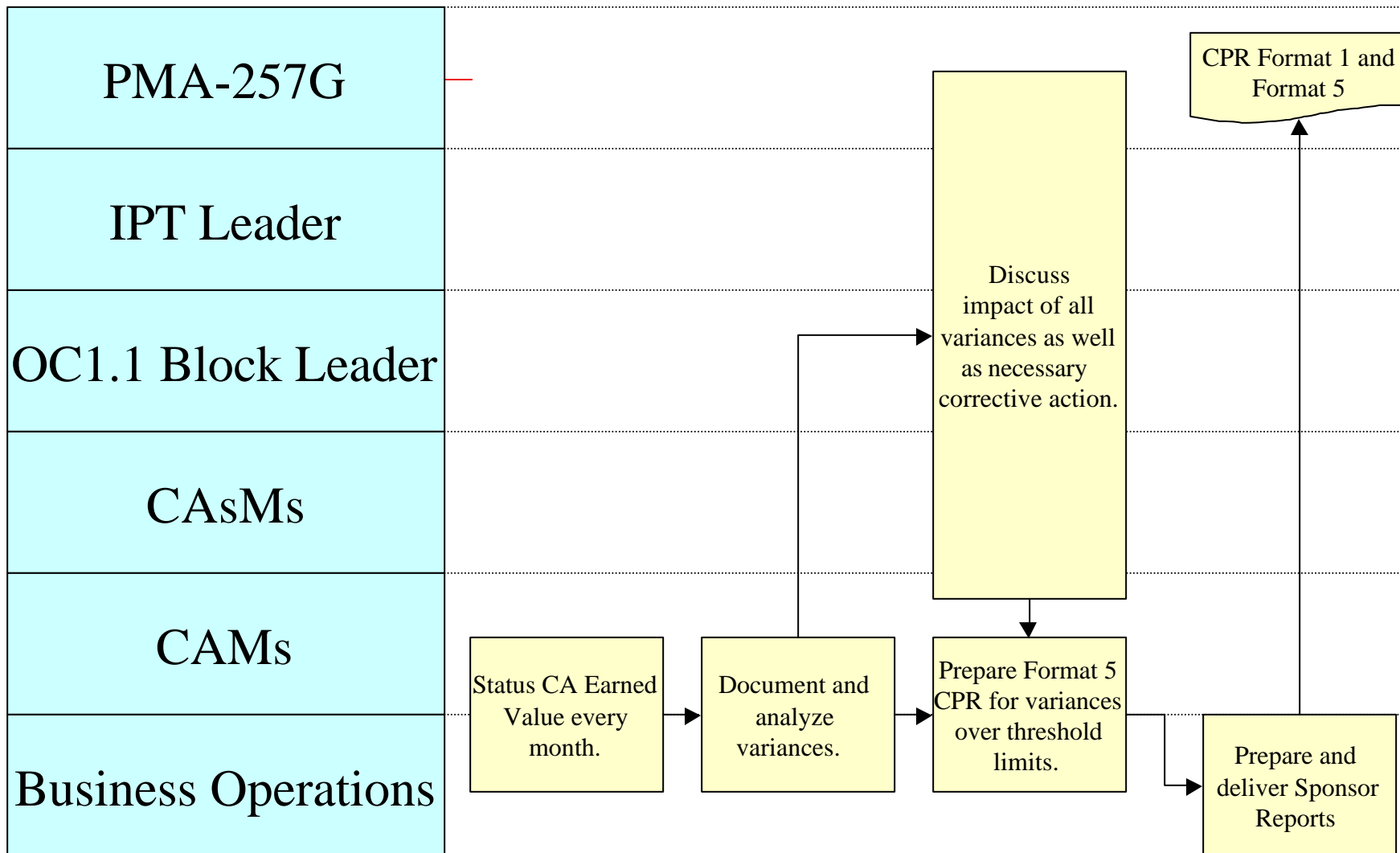




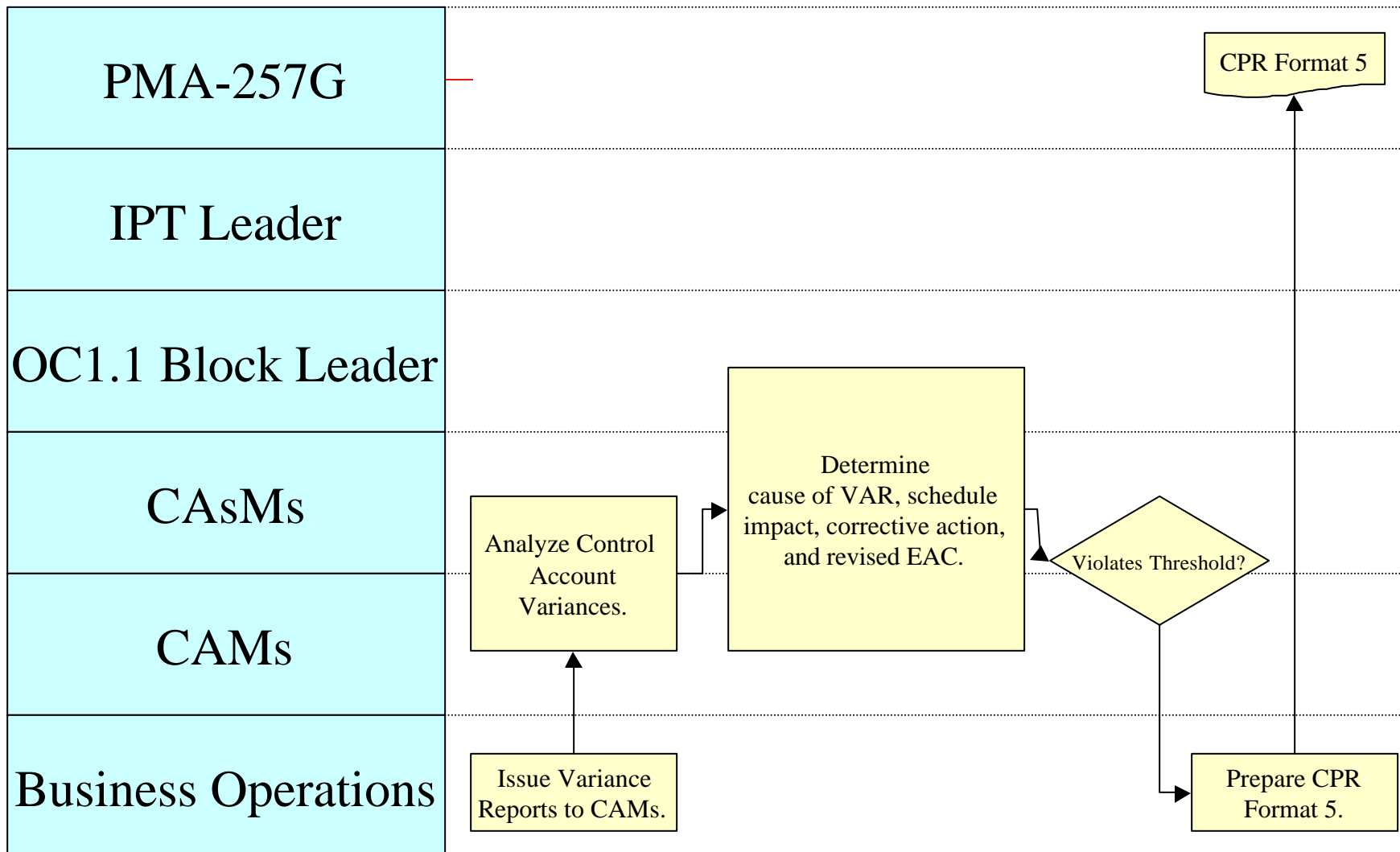
Control Account Contents

- Statement of Work
- JON
- Schedule
- Authorized Budget
- Time Phased Budget
- Earned Value Measurement Techniques
- Work Packages/Planning Packages
- Activity Schedule

Project Performance Analysis



Document and Analyze Variances



Program Unique Publication



■ PUP contents describe:

- Tools and methods program will use to accomplish Earned Value Management
- Deviations from the minimum requirements stated in the NAVAIR EVM System Description Document Version 1.1
- Aspects of a program's EVMS that is not fully compliant with DOD 5000.2-R criteria
- Work Breakdown Structure coding instructions
- Reconciliation of accounting data (ACWP)



Bringing it all together

an

Integrated Baseline Review (IBR)

April 19-21, 1999



OMNI OC1.1 IBR Expectations

- Provide the IPT with sufficient insight to ~~effectively~~ evaluate
 - ↗ the contents of the integrated EVMS
 - technical
 - budget
 - schedule
 - ↗ EVMS products
 - ↗ EVMS architecture
 - ↗ EVMS tools



IBR Entrance Criteria

- EVMS used for 2-3 months
- EVMS has generated CPR for 2-3 months
- PUP approved and signed
- PBB established
- POD approved and signed
- CAM Notebooks created



IBR Entrance Criteria Cont...

- Approved SOPR
- Approved Master Program Schedule
- Integrated NAWC-WD/Boeing WBS
- Integrated NAWC-WD/Boeing WBS Dictionary
- IBR Brief



IBR Team

- Led by Program Office IPT Leader
- Team members included:
 - Program office technical specialists
 - NAVAIR EVM Specialists (supplemented by contractor support)
 - OSD - Mr. Van Kinny
 - DCMC - DPRO St. Louis
- IBR held at Boeing's facility in St. Louis
(NAWC-WD CAMs came to Boeing)



IBR Results

- ~~IBR Team~~ consisted of 14 Technical & EVM Analyst
- Interviewed 23 CAMs
 - ↗ 16 of 17 Boeing CAMs
 - ↗ 7 of 10 NAWC-WD CAMs
- Generated Concern Reports
- NAVAIR will track concerns to resolution
- Review was completed in a cooperative & productive environment



Strengths

- First time Integrated EVMS has been accomplished between Contractor & Government Facility
- NAWC-WD & Boeing have established a baseline for performance measurement
- System interfaces functioning well
- Good CAM knowledge and management of tasks



Strengths cont...

- ~~Earned Value~~ metrics for software development
- Management commitment to EVM
 - Boeing EVM experience has been beneficial
 - NAWC-WD has made significant progress
- Leadership - CAMs and support staff were open & candid
- “CAM bakes” demonstrate use of EV data



Concerns

- Aggressive software productivity assumptions
 ↗(Issue resolved)
- Establish and manage a critical path schedule
- Create a process to transfer scope & budget between NAWC-WD & Boeing
- Amount of LOE in combined Control Accounts may distort performance measurement



IBR Summary



- IBR expectations achieved
- Performance measurement baseline captures cost, schedule and technical content of the project
- IBR review team identified pertinent issues that will improve the EVM system & data quality
- Project teams hard work, dedication, and commitment to the EVM implementation led to the success of the IBR



Conclusions



EVM Implementation Conclusions



- Journey towards establishing EVMS was valuable
 - Discussions among Task Team Leaders
 - Discussions between Boeing and NAWC-WD
 - Recognized activity dependencies between all organizations
 - EVMS provides baseline for budget, scope of work and schedule
 - Tool to manage requirements changes
- EVMS provided a means for a cultural change in engineering management at AV-8B



EVM Implementation Conclusions Cont...



- ~~Tools and~~ Boeing interface has worked
- Provides process for meaningful dialogue between product team and program team
- EVMS requires a lot of education for all team members
- Need to assess workload for EVMS administration overhead



Conclusions



- EVM has provided significant improvement in visibility of budget and work scope
- The IBR is a critical part of preparing to execute a program
- Program office has a powerful tool to focus management attention

Keynote Address

**College of Performance Management
Project Management Institute**

May 3, 1999

**Wayne Abba
OUSD(A&T)SA/PM**

Introduction

Thank you for that kind introduction.

Good morning, ladies and gentlemen. It's a real pleasure to be here with you today. I was happy to accept when Eleanor Haupt asked me to deliver the government keynote today because this fifteenth annual conference is also a first. It marks the beginning of what I am certain will be a most rewarding future for the new College of Performance Management as part of the Project Management Institute, the world's foremost association for professionals in the project management discipline—I can say that because I've been a PMI member since 1995. Before I turn to my keynote theme, I'd like to take just a few minutes to talk about how we transition to that future.

PMA, PMI and the Future

Many of you know that I was strongly in favor of making the Performance Management Association part of PMI, so I was gratified when the membership overwhelmingly approved moving in that direction. The vote was consistent with the PMA founders' vision. From the beginning, they insisted PMA should first establish itself and consider merging with another organization only when Earned Value Management was recognized as an integral part of project management. I became convinced the time was right after I joined PMI in 1995 and saw for myself that EVM was being accepted. To me, PMA's choice was simple: either lead the way in this evolution, or stand on the sidelines while PMI moved out on its own. The joining of PMA and PMI will result in something greater

than the sum of the parts. It will be a major step toward truly integrated project management, with earned value as the cornerstone.

We can make that happen, but it will take some planning. Consider for a moment the subject of EVM conferences. Five or six years ago, this annual conference and the fall conference at Tysons Corner were your only real options. Today, people have to make some tough choices because there is no possible way one could attend all the EVM events.

In the past year alone, world-class EVM events were held in Florida, Tysons Corner, Stockholm, London, Tokyo, and at the PMI conference in Long Beach. This year, Sweden and Australia will again have conferences and the Society for Cost Estimating and Analysis will increase the EVM content at its June conference in San Antonio. And those are only the major events. EVM now is included in conferences nominally devoted to topics like risk management and procurement. PMA helped make this possible just as our founders hoped it would, but now that the genie is out of the bottle all of us must accept that EVM is not “our thing” any longer.

As the defense industrial base continues to shrink and government continues to downsize, the associations that support them must adapt. For example, the National Security Industrial Association and the American Defense Preparedness Association joined forces to form the National Defense Industrial Association. And as the industry and professional associations combine, they have to decide how best to serve their constituents. That includes conferences.

When you arrived at the conference hotel, you no doubt saw many familiar faces, old friends from the EVM community. That’s always nice, but it should prompt you to ask how we are doing at reaching the managers who can benefit most from what we have to offer. Our training and expertise in EVM is second to none—are we limiting our audience by concentrating on EVM and preaching to the converted?

The time has come to ask how many EVM conferences the world can sustain. Without prejudging the answer, I believe we would agree that in the United States, we should continue the big Tysons conference and look

for ways to increase the EVM content at the annual PMI international conference. But something has to give. Does that mean we should forego this conference? I don't know—maybe we should—but I urge you to consider the possibility before members are forced to vote with their travel budgets and with their feet. If we do choose to end, let's do it like Wayne Gretzky—with style and at the top of our game.

I offer two suggestions for PMI and its new College for the year and a half between now and the Year 2000 PMI conference. First, let's make a concerted effort to introduce College members and EVM at PMI chapter meetings. And second, let's develop a plan to spread the EVM word at the conference in 2000.

If you've ever presented a paper at the PMI conference, you know it is managed professionally and you must submit your abstract very early in the year. That gives us about eight months from now to organize our approach. We have a couple of alternatives. The PMI conference is organized around tracks corresponding to the various interest groups: Aerospace & Defense, Manufacturing, Information Systems, and so on. I suppose we could hold a College conference within the PMI conference—and that might be a good way to offer our excellent EVM training. However, it could also mean that only people predisposed to EVM would come—people like us.

I think there's a better alternative, a better way to reach PMs. Let's combine our individual experience with our EVM knowledge and submit papers to the other tracks. For example, someone from a defense manufacturing plant that uses EVM could present in the manufacturing track; someone from a software house could present on EVM and software risk management in the Information Systems track, and so on. Next year's PMI track coordinators should be encouraged to include EVM papers when appropriate in their programs as a positive way to assimilate the College of Performance Management into PMI. CPM could organize volunteers who would like to submit papers. This is a golden opportunity for us to influence the future direction of project management.

In that same vein, CPM members should submit articles to the PMI family of publications. That includes a monthly magazine, PM Network. We have to decide how the Measurable News will fit in to the PMI publications or if it will continue as a CPM publication. In any event, we now have the means to reach a worldwide membership of well over 40,000. If we do our part, the project management profession will be better for the effort and maybe the question of conferences will work itself out in the process.

Transitions

While I'm on the subject of transitions I'd like to tell you about my own imminent career milestone. My keynote today nearly became my first post-retirement appearance. By now it's common knowledge that I will end more than 35 ½ years of government service on May 31. (It was to have been the end of April, but the departure date was extended.) Strange as it sounds, I've worked that long and still am below the minimum government retirement age, so this will be an early-out to help meet downsizing targets. And that's why it came up so suddenly.

Before I decided to take this big step, I called some key people for their advice. The first of course was Gary Christle, my boss for the past 17 years, who I reached at home on Sunday—so he *knew* I was serious. I also spoke with Bob Pattie, Art Anderson, Walt Berkey and other industry leaders and with Bill Gibson, the point guy for EVM at the Defense Contract Management Command. All agreed with me that the essential policy pieces are in place to carry through the Department of Defense's reinvention of EVM as a management tool. And we all agreed that practice in the field does not match the policy ideal as much as we would like. We still have work to do.

But I'd also like to invite you to reminisce with me about how much we've accomplished and to reflect on our individual roles. As we stand on the threshold of the millennium, I look back with satisfaction on a public service career that spanned more than one third of the last century. I spent about half of that time—almost 17 years—at the Pentagon, arriving there late in the summer of 1982. Being a slow learner, it took me some time to find my way around the building and around the bureaucracy, but

the EVM world took a turn for the better in 1989 when my office was moved from the Comptroller over to Acquisition. That's when I assumed my most important and challenging role—that of change agent.

In the early 1990s, Gary and I pretty well figured out what was wrong with the way the Department of Defense implemented Cost/Schedule Control Systems Criteria, or C/SCSC. He presented a vision for improvement at the 1993 Tysons conference, then empowered me to flesh it out. Since then, all these conferences have included updates on how we are doing, steadily counting off the improvements as we took these actions:

- We redefined EVM from financial reporting to project management
- We abolished the old C/SCSC committee structure in favor of making DCMC the DoD executive agent
- We implemented the Integrated Baseline Review process
- We integrated EVM with risk management
- We invited industry to replace C/SCSC with an industry standard and then adopted the draft industry Earned Value Management Systems guidelines in DoD regulation, and
- We fostered extraordinary international cooperation among government and industry

Which brings me closer to my keynote theme—the globalization of EVM. But first, let me say two things about my DoD legacy. First, my work is not quite finished. I will adopt or will have ready for adoption the industry standard before I leave. That means Appendix VI of DoD 5000.2-R will be deleted and the body of that regulation will instead point to the industry EVMS standard, ANSI-EIA 748. For the first time in more than 30 years, industry, not government, will be responsible for the principles governing its own management systems.

Second, some people in government as well as industry still are not taking advantage of the EVM improvement initiatives. The reasons are diverse, but from my perspective, things are improving steadily. Our teamwork with industry has paid off time and again as integrated product teams improved their project planning and execution skills using the integrated project management tools we have provided. There are some wonderful examples of openness and trust between contractors and their customers.

But progress can be slowed if not stopped in its tracks through resistance, and you will encounter that in any large organization. I can tell you from experience that when I am consulted on a problem contract, I almost always find that those new and improved tools have not been provided to our contractors and project management offices. And yes, I know that some IBRs still look like C/SCSC reviews but overall, I trust you will agree that things are much better today than six years ago.

That brings to mind the story Dr. Kaminski often told about trying to change behavior in DoD. He said it's like turning a supertanker—it takes a long time after you turn the wheel before the ship comes about, assuming the wheel is connected to the rudder. As large as DoD is, I can assure you there are many places where the connection between policy and practice is broken.

Obviously, no one organization can fix all the problems. But I can tell you that my office understands them and will continue its leadership under the direction of Gary Christle and his boss, the new Director of Systems Acquisition, John Wilson. For your part, people in both industry and government must point out those broken connections, using any appropriate means. We then need to communicate lessons learned, the positive as well as the negative.

Keynote Theme

Moving now to the keynote theme of EVM worldwide, you will notice that our international colleagues too are facing the hard choices I mentioned earlier. Otherwise you would have heard directly today from the International Performance Management Council chairman, Martin

Blackmore of the United Kingdom Ministry of Defence. Martin sends you his warm regards and best wishes as do our counterparts from Australia, Canada, New Zealand and Sweden.

By way of background, you may recall that international EVM cooperation began in the early 1990s when first Australia and then Canada embarked on searches for best practices in contract cost and schedule management. Both found their way to the Pentagon. Let me emphasize that point, because it's a common thread in our international relations: when our friends and allies seek to improve their management of complex projects, they find that the DoD model is the most highly evolved.

I guess that should not be a surprise because DoD is the birthplace of modern project management. The Department pioneered many of the management techniques being used worldwide. However, our track record in the early 1990s was less than enviable due to spectacular overruns and failures on several programs. We did not attempt to gloss over our problems, but shared both our successes and failures as openly as possible with other countries.

By 1992, our cooperation began to solidify when we put EVM on the agenda for the Australia/Canada/USA Defense Forum in Washington. The next year, we founded the International Performance Management Council with charter members including those three countries plus Sweden. With each new country, our horizons expanded and we learned new things. For example, a defense official from the Swedish embassy corrected me at the first IPMC meeting. He said that Sweden had not implemented C/SCSC on the Gripen Fighter program as I had assumed, but had implemented earned value.

The distinction was important because Sweden, like other countries, knew our history with C/SCSC and did not wish to import the bureaucracy along with the technique. But before long they had sufficient confidence to join the IPMC as a full member.

Formalizing Cooperation

The form of our international participation varies among nations. In 1995, Australia, Canada and the United States formalized our interlocking bilateral arrangements by signing a trilateral Memorandum of Understanding. Sweden did not wish to participate on that relatively formal level, so we instead signed a simple exchange of letters and did the same when New Zealand and the United Kingdom joined the IPMC later. This uncomplicated working model has accommodated all interested nations to date.

The objectives of international cooperation are the same both for the MoU and for the IPMC. In fact, we tied them together by making the IPMC the body that administers the MoU. Those common objectives for each country are:

- To use wisely the funds provided for defense
- To cooperate with industry and
- To strengthen the industrial base

In order to achieve those objectives, the IPMC engages in these types of activities:

- Exchange information on national policies and procedures
- Seek to recognize contractors reciprocally in each country
- Improve project management using earned value
- Engage in outreach to industry, academia and professional associations

The MoU is nearly halfway through its original ten-year life, subject to extension. Meanwhile, both the MoU and the IPMC remain open to participation by the governments of other friendly foreign countries.

The IPMC is a low overhead activity. We meet in conjunction with conferences and make maximum use of email and the internet. We have but a few guiding principles. First, we know that project management practices will differ among countries. A one-size-fits-all model simply cannot be transferred from one to another. We respect those differences and keep our discussions on a high enough plane to avoid getting bogged down in details.

Second, we communicate openly. This is facilitated by the third principle—that members must know project management and their governments' performance management policies. Finally, we operate by consensus. This forum is not about the relative size of our countries or our budgets, it is about ideas. And in the realm of ideas, all are equal.

Results of Cooperation

You might ask if such a loosely organized group can accomplish any practical results. The answer is yes. For example, we have assisted one another on contractor reviews when one of us awards a contract to a company in another member's country. Australia awarded contracts to two US contractors, E-Systems Greenville (now Raytheon) and Kaman Helicopters, that were not previously accepted as compliant with C/SCSC or EVMS.

I participated on the first multinational Canadian validation at SPAR Aerospace, a Canadian Space Agency contractor, in 1994,. And just last September, I participated on the Royal Australian Air Force review for the Lead-In Fighter Hawk contract at British Aerospace in the United Kingdom. Australia was kind enough to invite Martin Blackmore to visit the review team on site. That experience will be instructive for the UK as it weighs how to implement EVM with its industry.

I have watched with pleasure as our intergovernmental cooperation has noticeably improved communication between government and industry in other countries. And as industry observes the governmental cooperation, it has found that cooperation on a global level is in its interest as well. Last October at Tysons Corner we facilitated a meeting among the authors of

national standards for project management, with representatives from Canada, UK, Australia, Japan and the USA.

The consensus was that the US industry ANSI standard for Earned Value Management Systems is the de facto world recognized best practice. Again, there is a practical consideration. Not long ago, British Aerospace bought a sizable interest in Sweden's Saab Military Aircraft, a trend that is likely to continue in Europe as the global defense market shrinks. Having a common set of enterprise project management principles will help these international consortiums manage more efficiently while helping their government customers reach their objectives.

Our IPMC outreach activities have been most productive. I am absolutely delighted that both Gary Christle and John Wilson have agreed to maintain DoD's strong support for them after I move on.

Current EVM Activities

I'd like now to comment briefly on EVM activities in each IPMC member nation and give you a report on my trip to Japan in February 1999 before concluding my remarks.

Australia is our oldest EVM partner. We have grown accustomed to seeing our Aussie friends in the US since 1991, and this conference continues their welcome presence. Australia has a well-defined EVM process in Defence contracting, with a strong international influence because many of those contracts are awarded overseas. Australia therefore has become a leading influence in the EVM world by bringing new ideas to places where EVM is well established, such as the E-Systems and Kaman reviews I mentioned earlier, and by introducing it where it is not. Thanks to our trilateral MoU, those Australian validations are recognized by Australia, Canada and the US.

Speaking of new ideas, Australia pioneered the idea of payment by earned value and is making it work. I'm sure that comment raised the collective blood pressure in the room by several points. Because the US has a well-established way to make progress payments, the idea of paying by EVM

sounds alien. But in other places, it's a natural extension of EVM. Think about it—EVM provides objective performance information linked to the contract target. Why would you NOT pay based on that? Australia's approach deals effectively with all the expected objections, accommodating such things as advance payments and material measurement by balancing payment by EVM when appropriate—for example, for labor—with payment by milestones.

Some people worry that paying by EVM will cause contractors to game the EVM system to improve their cash flow. That's a valid concern, but the IBR should help us avoid such problems. And of course we should use past performance assessments effectively to make sure that if the system is gamed, it doesn't happen more than once. I think that payment by EVM, now being introduced in the US by Australia, is an issue our community should begin to address with a view to providing recommendations for policy makers.

Australia will hold its fifth government/industry EVM conference this September in Canberra. New Zealand has not been very active in the EVM area, although it remains a valued member of the IPMC. Of course, New Zealand is allied with Australia and participates jointly on programs such as the ANZAC frigate.

Canada also has a well-defined EVM process, but not just in defense. Canada's policy is administered by Public Works and Government Services Canada for all government agencies and relies on a voluntary national standard as opposed to government regulation. As Canada's defense spending has declined in recent years, Canadian industry and government have cooperated on an EVM standard for smaller programs. The new standard could be a model to replace our Cost/Schedule Status Report, perhaps by revising the ANSI standard to provide for a scaleable approach.

Just one month from now, Sweden will hold its third annual EVM conference in Stockholm. Sweden has a substantial defense industry, including well-known companies like Saab, Ericsson, and Celsius Tech. Sweden decided two years ago to make EVM part of its acquisition

reform. Its approach is to cooperate closely with its contractors, based on their long history of working together.

Our colleague Sven Antvik can't be here today because he is busy completing the writing on his doctoral dissertation on EVM, which he hopes to defend as early as this summer. Unfortunately, Sven is writing in Swedish, but he promises to write articles based on his research in English.

The United Kingdom is the newest IPMC member. The decision to join was taken following several years of informal contact and was announced during a series of EVM events in England last year: A public conference in London, an industry user group meeting in Oxford, and a meeting with defense leaders at Abbey Wood, Bristol, the home of the Defence Procurement Agency.

EVM in the UK began in industry, not the government. For example, Rolls Royce Aircraft Engines adopted EVM and sent several employees to our Defense Systems Management College at Fort Belvoir. The Ministry of Defence traditionally has preferred a "hands-off" acquisition approach, but there are signs that may be changing. When Martin Blackmore attended the Australian review outbrief in September, he was impressed by the open sharing of information between British Aerospace and the Royal Australian Air Force on a \$700 million firm-fixed price contract.

Martin was accompanied at the review by representatives of the Australian High Commission in London. The High Commission took part in the review and sponsored EVM training for its employees afterward, to which they invited people from the Ministry of Defence. So once again, we see our IPMC cooperation making an important contribution as a new member works through its own issues regarding EVM. On June 4, immediately following the Stockholm conference next month, MoD will hold a one day seminar in Abbey Wood to discuss those issues and to broaden EVM understanding throughout the Defence Procurement Agency.

Japan

The internationalization of EVM took a huge step forward recently in Japan. Throughout 1998, teams from the Japan Ministry of Construction traveled the world, seeking best practices in project management. They visited Australia, the US, UK, Germany and Italy and a broad cross section of government agencies, industry, academia and professional associations. Their many site visits included MicroSoft, Boston University, UC Berkeley, AT&T, PMI and similar organizations in other countries: The University of Technology Sydney, PMI Rome, the International PM Association in Munich and the British Standards Institution in London.

Their reviews included a comprehensive benchmarking process that considered every major advance in project management since the 1950s. And like others before them, the Japanese decided at the end of the day that the world's best practice for managing complex projects is EVM based on the US Department of Defense model.

The survey teams presented their findings at a public seminar in Tokyo in February of this year, co-sponsored by the MoC and the PMI Tokyo Chapter. More than 300 people attended the seminar, from all walks of Japanese industry and government. And just as in UK last year, the sponsors arranged several side meetings with government and industry leaders.

I was honored to be the only non-Japanese speaker invited to present the international experience with EVM. I found the Japanese approach to EVM to be very well-grounded. Japan expects to have a national standard by 2002 and to have widespread implementation by 2004. Those goals sound optimistic but may be achievable because the decision to go forward was based on extensive research and represents a broad consensus.

It would be difficult to overstate how important our new affiliation with Japan could be. For starters, the MoC is the first agency to take the EVM lead for any nation completely independent of the defense establishment. This will present us with a new challenge when the Ministry requests Japanese membership in the IPMC, which could occur shortly. But that is

a welcome challenge and an extraordinary opportunity because the MoC is a trend setter in Japan due to its extensive power and reach.

The MoC represents some 15% of Japan's gross domestic product. Its industrial base comprises more than 400,000 contractors and millions of employees. MoC soon will combine with the Ministry of Transportation and also has ties to other government agencies such as the Ministry of International Trade and Industry. And the PMI Tokyo Chapter is affiliated closely with MoC.

Given this broad base, I believe we will see Japan emerge quickly as a leader in integrated project management based on earned value. As we meet here today, MoC agencies already are beginning EVM pilot projects. Japan will join us in defining project management for the new millennium by working with the IPMC, with PMI and with the international industry groups that are working to coordinate their national standards or develop an international standard.

Summary and Conclusion

In summary, we've covered a lot of ground this morning. I offered some thoughts on bringing our integrated project management talents to bear in the larger PMI universe, reviewed how the Department of Defense and its contractors changed from C/SCSC to EVMS, and gave you a glimpse of a rapidly expanding EVM world.

EVM once was identified almost exclusively with defense contracting, but those days are gone forever, replaced by increasing worldwide acceptance and cooperation. Such cooperation benefits all concerned because globalization is real and demands that we work together more effectively, whether we represent government, industry, or professional associations.

The roles among those players are changing and will continue to evolve. Government will play a lesser role in defining and mandating industrial management principles, while industry and the associations increase their respective roles. We must do all we can to increase our lines of

communication through these transitions. I will miss being involved from the government point of view, but certainly will continue as a member of several professional associations—and may even gather some experience in the industrial sector.

So while I am learning how to relax in June, my superiors will carry a message of unflagging US support for good global citizenship to Stockholm and to Abbey Wood and will carry the same message in September to Canberra. They will renew acquaintances with old friends and colleagues from the current IPMC nations and welcome our newest friends from Japan. I hope many of you will be at those conferences or others and that you too will find ways to get involved in the worldwide growth of EVM.

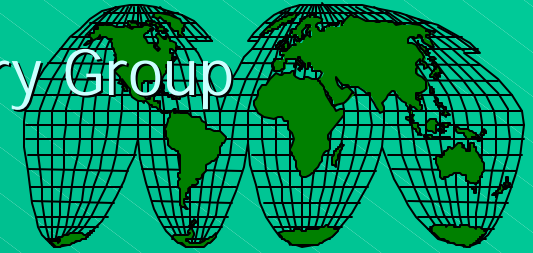
One final point—we have evolved from C/SPEC through C/SCSC to EVM. But the name that resonates on the world stage and better represents what we are about is “Integrated Project Management.” I suggest we take it up, understanding that while EVM and project management are not synonyms, EVM in its contemporary application is the cornerstone of effective project management.

Thank you again for inviting me to speak today. It has been a distinct honor and privilege for me to represent our community worldwide for the past several years. I look forward to spending the next two days with you and to continuing our professional relationships for many years to come.

PROGRAM MANAGEMENT INTERNATIONAL INDUSTRY GROUP

Three wireframe globes are positioned behind the title text. The continents are highlighted in a solid green color, while the oceans and grid lines are transparent or light blue. The globes are arranged in a slightly overlapping, horizontal row.

PRESENTATION
BY
ROBERT D. PATTIE



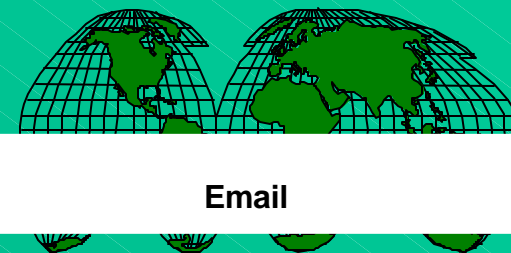
AGENDA

- BACKGROUND
- STRUCTURE
- PURPOSE
- ACTIVITIES
- COMMUNICATION
- PANEL DISCUSSION
- SUMMARY

BACKGROUND

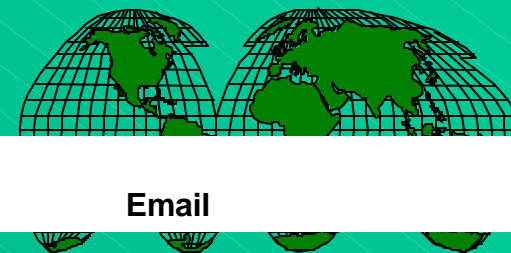


- INFORMAL WORKING GROUP
- FORMED OCT. 1998
- IDENTIFIED INTERFACES
 - KEVIN LONERGAN - UK INDUSTRY
 - BOB PATTIE - US INDUSTRY
- DEVELOPED A MAILING LIST



| First | Last | Organization | Telephone | Fax | Email |
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|----------|-----------|------------------------------------|----------------------|--------------------|--|
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| Roger | Andrews | Bae | 44-1772-854245 | 44-1772-855276 | mailto:roger_e.andrews@bae.co.uk |
| Sven | Antvik | Sweden-National Defence College | 46-8-788-9709 | 46-8-788-9481 | mailto:Sven_Antvik@lector.kth.se |
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| Van | Kinney | US DOD | 703-695-6155 | 703-693-7043 | Kinneyva@acq.osd.mil |
| Kevin | Lonergan | PMIS Consulting –UK | | | mailto:kevin.lonergan@pmis.co.uk |
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| Kirsty | McLean | Aust. Exch | 310-335-4248 | 310-335-4227 | Kristy.mclean@atlavista.net |
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| John | Pakiz | Boeing, Huntington Beach – NDIA | 714-896-4062 | 714-896-5324 | mailto:John.j.pakiz@west.boeing.com |
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| Colin | Perrott | Proj. Ini | 011-44-1937-541777 | 011-44-1937-541555 | Colin.perrott@proj-ini.co.uk |
| Roger | Pither | Chair-PPMS Committee | 613-852-7370 | | Rpither@gamma.ca |
| Jim | Rego | | | | |
| Barry | Schuler | US-Artemis | | | mailto:barry_schuler@artemispm.com |
| Randy | Steen | Boeing Military A/C & Missiles | 314-232-8359 | 314-232-3590 | mailto:randall.r.steen@mw.boeing.com |
| Bob | Surrency | NDIA/Lockheed Martin | 770-494-2421 | 770-494-9949 | Bob.surrency@lmco.com |
| Kim | Zeillman | Boeing | 253-657-1004 | 253-657-3942 | Kimberly.m.zeilmann@boeing.com |

STRUCTURE



■ PARTICIPATION

- GOVERNMENTS -(US, UK, AUSTRALIA, SWEDEN, CANADA, STATE OF CALIFORNIA)
- INDUSTRY REPRESENTATIVES -(US, UK, CANADA, JAPAN)
- ASSOCIATIONS -(NDIA, PMIS, PMI)



PURPOSE

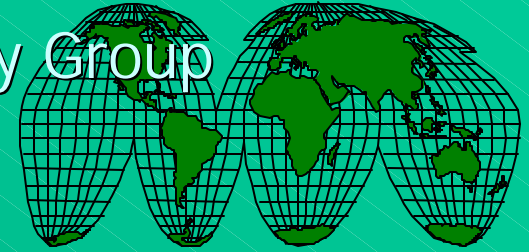
- EXCHANGE OF IDEAS
- DEVELOP UNDERSTANDING OF VARIOUS STANDARDS AND PRACTICES
- MAINTAIN INTERFACE WITH GOVERNMENT OFFICIALS
- MERGING OF INTERNATIONAL STANDARDS FOR PLANNING AND CONTROL OF PROJECT RESOURCES

ACTIVITIES



- US INDUSTRY -- ANSI/EIA 748-98
- US GOVERNMENT -- REVISE 5000.2-R
- UK INDUSTRY -- EVMS USER GROUP
- JAPAN GOVERNMENT -- MINISTRY OF CONSTRUCTION
- AUSTRALIA VALIDATES BRITISH AEROSPACE

ACTIVITIES



■ COMMUNICATIONS

- CONFERENCES
- WEB PAGES
- DOCUMENTS

COMMUNICATION



■ CONFERENCES

- JAPAN -- FEB.
- PMA -- MAY
- NDIA/PMA/SCEA -- NOV.
- PMI -- OCT.
- SWEDEN -- JUN
- AUSTRALIA -- SEPT.

COMMUNICATION



■ WEB PAGES

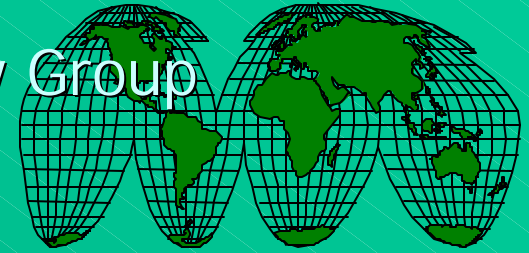
- US DoD OSD -- INTERNATIONAL PAGE
- CANADA
- SWEDEN
- AUSTRALIA
- JAPAN
- NDIA
- PMI
- PMA

COMMUNICATION



- DOCUMENTATION REVISIONS/NEW
 - REVISION TO 5000
 - REVISION TO EVMIG
 - REVISION TO PMBOK™
 - NEW WRITING FOR JAPAN
 - STUDENT/PROFESSIONAL WRITINGS

PANEL DISCUSSION



■ TOPICS FOR DISCUSSION

- Discuss your views:
 - Integrated Program Management
 - Earned Value
 - Earned Value Management
 - Earned Value Management Systems
 - Integrated Resource Control
- From your perspective what value do you see in having an international industry group for EVMS.
- What advantages do you see in participating in this group?

PANEL DISCUSSION



■ TOPICS FOR DISCUSSION (Continued)

- With documents such as:
 - ANSI/EIA - 748
 - BS6079
 - ISO 9000
 - ISO 10006
 - PMBOK™ Guide
 - The new writings from Japan,
- is there a need for a single common document?
- From your perspective, what product should be produced and for whom?

SUMMARY



- OPEN DISCUSSION FROM THE AUDIENCE
- RECORD COMMENTS/SUGGESTION FOR CONSIDERATION BY THE PROGRAM MANAGEMENT INTERNATIONAL INDUSTRY GROUP

PROJECT MANAGEMENT INSTITUTE: **1999 and Beyond**

Harold R. Reeve, Ph.D., PMP - PMI Chair



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Project Management Institute

**Celebrating 30 Years as the World's
Leading Association for the
Project Management Profession**



PMI History

Founders

Dr. J. Gordon Davis

Edward A. Engman

Susan C. Gallagher

Eric Jenett, PMP

James R. Snyder





PMI History



1969 Five volunteers working out of a house in Springfield, Pennsylvania, USA

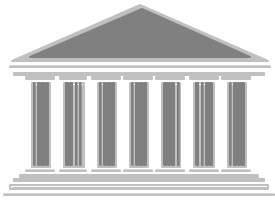
1973 First part-time paid staff hired

1974 First chapter chartered
- Houston, Texas USA

1975 Leased office space



First chapter chartered outside of USA
- Southern Ontario, Canada



PMI History



1977 First full-time paid staff hired

Annual Budget of US \$ 125,000

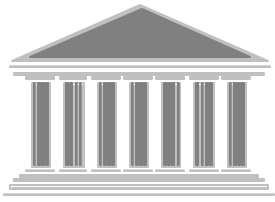


1981 First Chapter outside of North America chartered - South Africa

1982 First paid Executive Director

1987 Publishing Division established

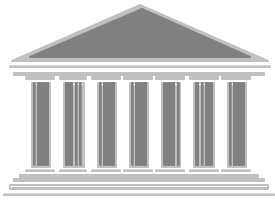
Annual Budget of US \$ 1 million



PMI History



- 1993** Purchased 6,000-square-foot building
Approximately 15 employees
Annual budget of US \$ 2.4 million
- 1998** Purchased and built present 16,000-
square-foot building
- 1999** Approximately 75 employees
Annual Budget of over US \$ 16 million



Current Status



PMI Membership Statistics

(as of 31 March 1999)

Total Membership: 43,733

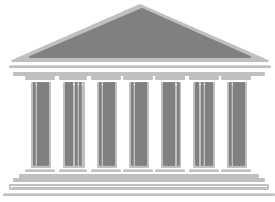
- Geographic Distribution of the Membership:

United States: 75.51%

Canada: 11.02%

Outside U.S./Canada: 13.47%

- 1999 Growth Rate: 25.6%



Components



143 Chapters

20 SIGs

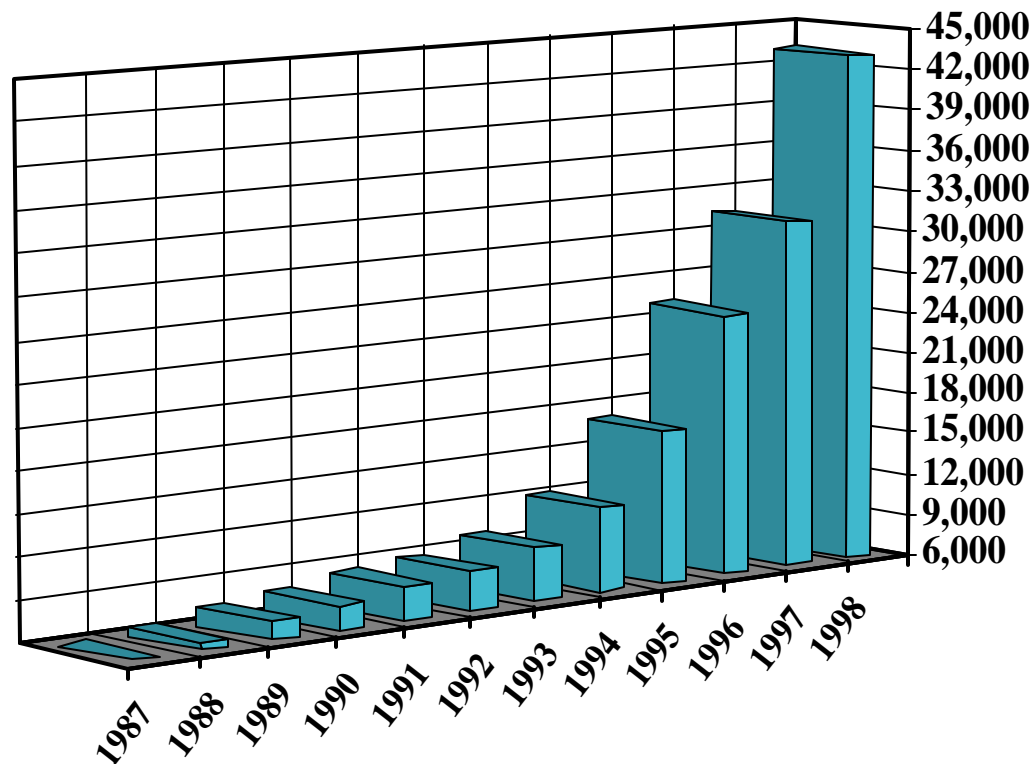

1 College



The Growth of PMI

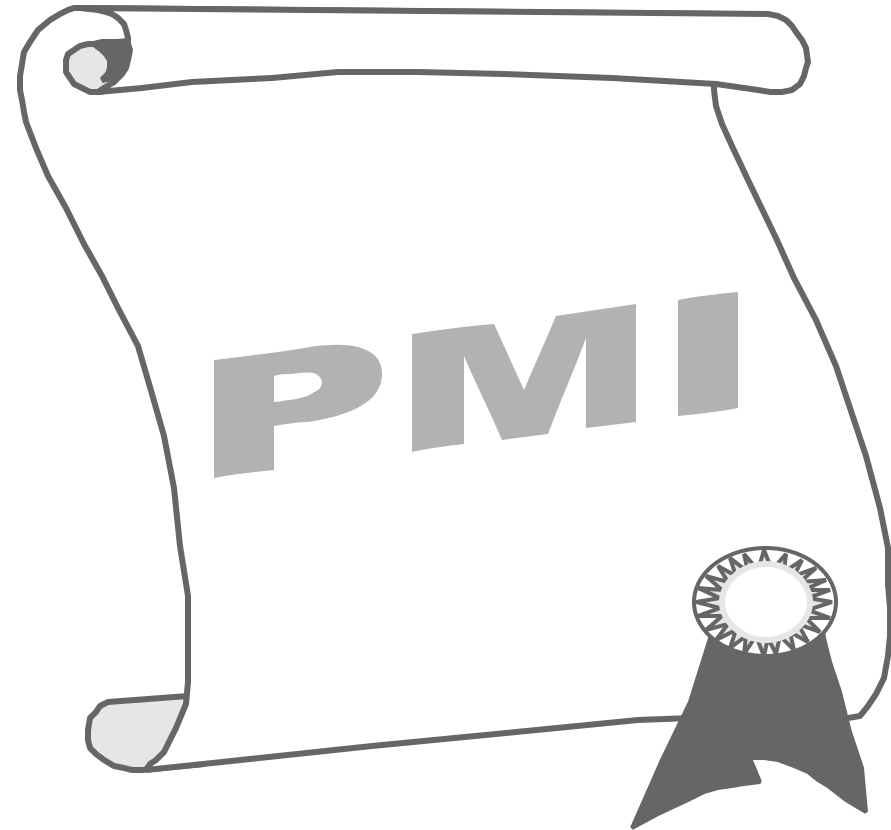


Growth of Membership



PMI's New Governance Structure

**Approved by 87%
of members who
voted in 1998**





Policy Governance® Model



Accountabilities and Responsibilities

- Members elect Board of Directors
- Board seeks advice from Strategic Committees (Board/Members)
- Board decides on strategic objectives, policies, results, priorities
- Board holds Executive Director accountable for results
- Executive Director holds HQ staff accountable for operations
- Staff Managers utilize staff to carry out operations
- Members serve as knowledge experts on Member Advisory Groups





Board of Directors



- Twelve Directors-at-Large (elected by membership)
- Three Officers (Chair, Vice Chair, Secretary-Treasurer)
- Executive Committee: Officers plus two Directors-at-Large; Chair presides
- Planning Committee: Executive Committee; Vice Chair Presides
- Finance Committee: Executive Committee; Secretary-Treasurer Presides



Board Committees



Purpose: To identify, formulate and recommend a road map for the future needs of PMI and the project management profession

- Governance Performance: Assessment of BOD
- Technical Activities: Core Competencies
- Nominating: Strengthen Elected Leadership
- Ethics/Conduct: Ensure Fair Process and Procedures



Board Committees



- Global Council: Global PM related issues and topics
- Accreditation Action Team: Accreditation program for PM degree
- Joint Advisory Council: Liaison between Board and PMI Components (Chapters, SIGs, Colleges)
- Global Project Action Team: Global Vision/Plan



Headquarters Staff



Executive Director

Associate Executive Director

Departments

Certification

Education

Facilities/Fulfillment

Finance/Administration

Human Resources

Marketing

Meetings/Conventions

Membership Services

MIS

Publishing

Research/Standards

Worldwide Component Affairs



Member Advisory Groups



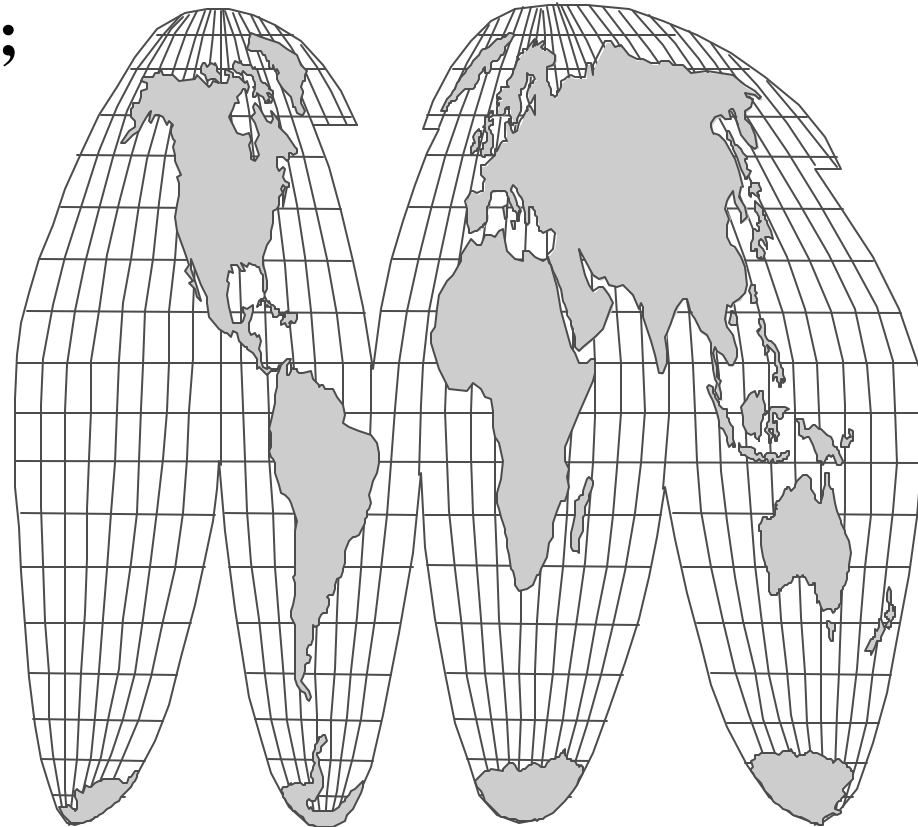
Purpose: To conceptualize, plan and execute operational activities

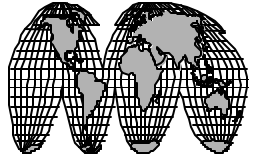
- Certification
- Education
- Facilities/Fulfillment
- Finance
- Human Resources
- Marketing
- Membership Services
- MIS
- Publications
- Research
- Standards
- Symposium

Globalization Policy

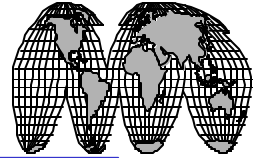
Why...

- **Impact on professionalism of project management worldwide**
- **Improved delivery of products; improved satisfaction of worldwide membership**
- **Larger pool of knowledge and wisdom; establish learning opportunities for project management profession**

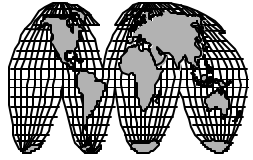




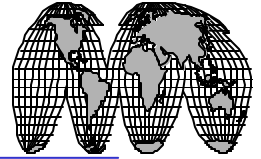
Premises of Globalization

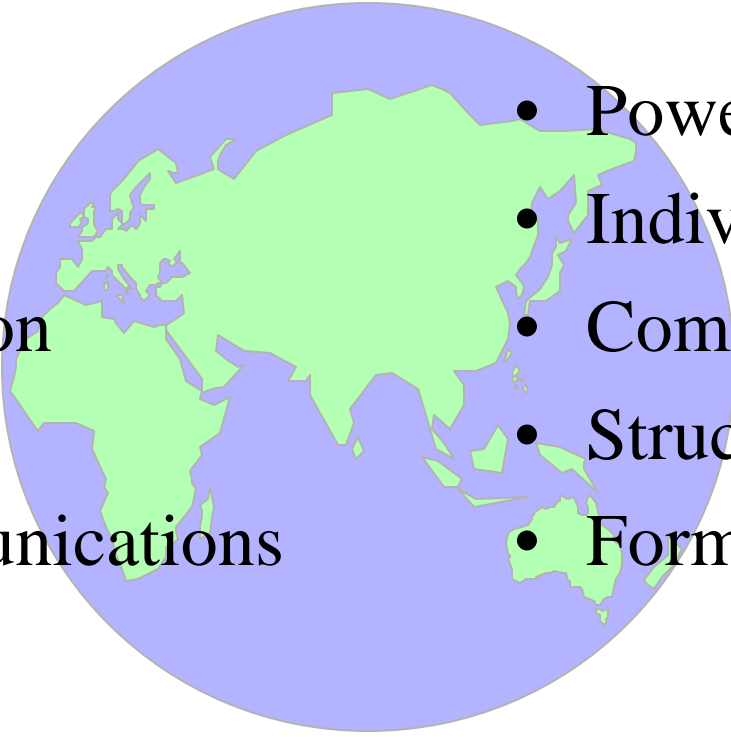


1. Globalization of corporations and industries will be a dominant drive in the economy enabled by the Internet and related technology.
2. Project management will be a global profession.
3. Globalization of organizations like PMI will be essential to professionalizing project management.
4. Project managers will be global and mobile.
5. Membership will be characterized as globally based rather than USA-based.



Ten Key Cultural Factors

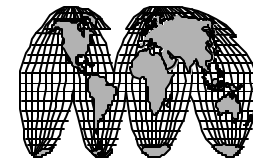


- 
- Nature
 - Time
 - Tradition
 - Action
 - Communications
 - Power
 - Individualism
 - Competition
 - Structure
 - Formality

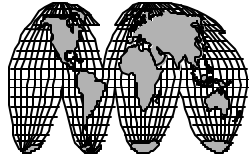
Source: Michael Kammerdiener



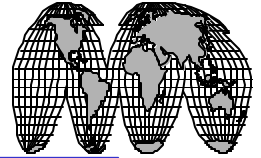
GPAT Purpose



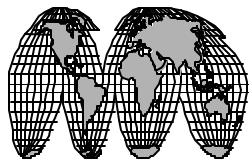
1. To analyze PMI's current global position and mindset against its declared mission.
2. To make strategic recommendations to the PMI Board concerning the globalization of PMI.
3. To identify global customers demands and needs.
4. To evaluate the required resources to meet global customer demands.
5. To analyze the pros and cons of chapter components and intersociety partnerships and recommend to the Board roles and responsibilities of each.
6. To build enthusiasm and awareness among staff, volunteers and customers for the globalization process.



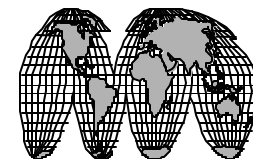
PMI's Globalization Timetable



- **October 1998 - June 1999** - Make the PMI community aware of the globalization challenge and conduct needed strategic environmental scanning
- **June 1999 - December 1999** - Prepare PMI Global Strategic Plan
- **December 1999 - June 2000** - Conduct operational environmental scanning and develop PMI Global Implementation Plan
- **June 2000 - June 2005** - Implement the Global Implementation Plan

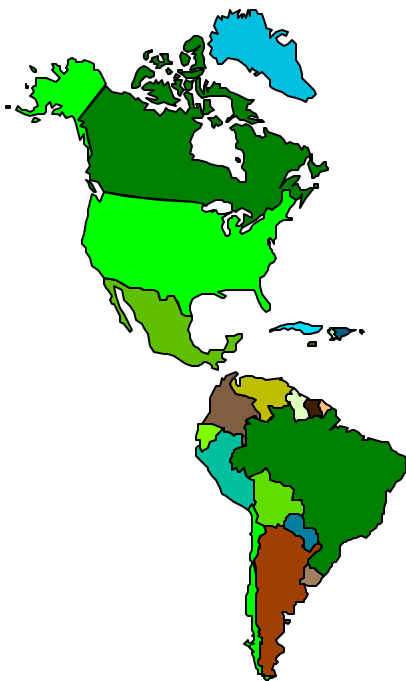


PMI Global Membership



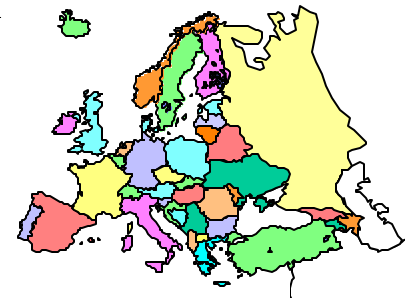
The Americas

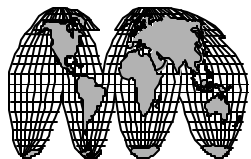
- Canada
- United States
- Argentina
- Brazil
- Chile
- Columbia
- Ecuador
- Mexico
- Peru
- Venezuela
- Others



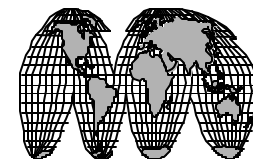
Europe

- Western Europe
- Central/Eastern Europe
- Scandinavia
- Russia
- Baltic States
- Former Soviet Union Nations
- Turkey
- Others





PMI Global Membership



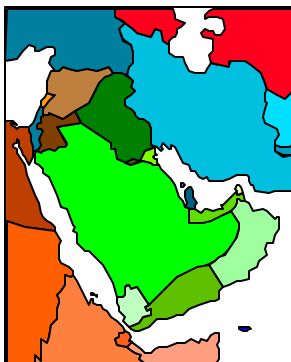
Africa

- Egypt
- South Africa
- Zimbabwe
- Others



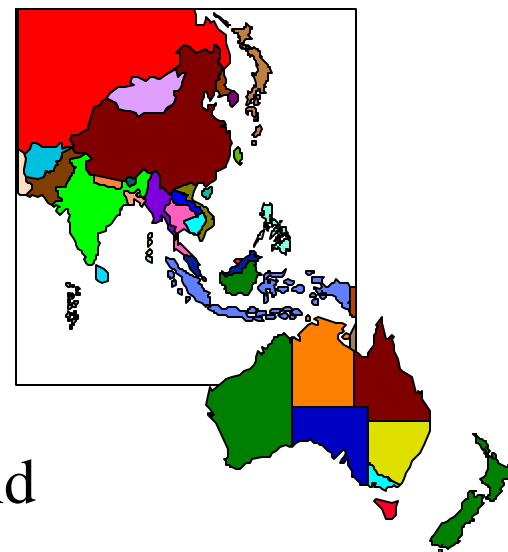
Middle East

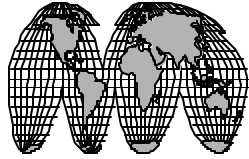
- Arabian Gulf
- Israel
- Saudi Arabia
- Others



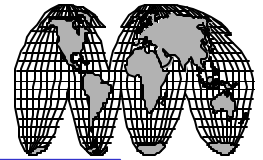
Asia and the Pacific

- Australia
- India
- Indonesia
- Japan
- Korea
- Malaysia
- New Zealand
- Pakistan
- Philippines
- Others





Globalization



www.pmi.org



Building professionalism in project management.™

Project Management Institute



PROJECT MANAGEMENT INSTITUTE
30th ANNIVERSARY
1969 • 1999

- Membership
- Certification
- Education
- Publications
- Chapters
- SIGs
- Standards
- Search



A Guide to the Project Management Body of Knowledge (PMBOK™ Guide)
[Download it FREE!](#)

About PMI

Since its founding in 1969, Project Management Institute (PMI®) has grown to be the organization of choice for project management professionalism. With almost 45,000 members worldwide, PMI is the leading nonprofit professional association in the area of Project Management. PMI establishes Project Management standards, provides seminars, educational programs and professional certification that more and more organizations desire for their project leaders.

PMI News

30 March 1999

[New Certification Handbook](#)
The new Certification and Global Certification Handbooks are now available for download in PDF format. These Handbooks replace the previous Certification and Standards Brochures.

[1998 In Review](#)
A Year of Success - A Year of Change

PMI Standards Program Needs Volunteers
Volunteers needed for [project to develop model for improving project management capabilities in organizations](#). Other volunteer opportunities exist within the [PMI Standards Program](#).

[ACP/ASC Leadership Meeting](#)
The March 1999 Board of Directors Meeting and ACP/ASC Leadership Meeting were held in Dallas, Texas, USA 12-14 March 1999.

PMI Members

PMI Headquarters

PMI Board

Contact Us

Articles of Interest

Seminars World Catalog

PMI® thanks all of you who attended our first seminar series in Europe. We invite you to check out our seminars in the U.S.A. and Register Online Today!

PMI Bookstore

Features all books published by the Project Management Institute as well as a complete catalog of titles from other publishers-more than 1,000 of the best project management books in print.

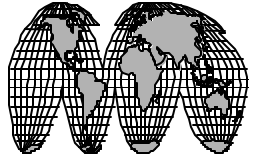
Career Headquarters

Contains Job Postings for Project Management positions and the Generalist Directory

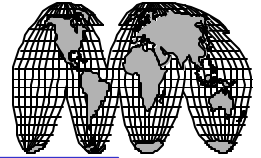
Seminars & Symposium

Philadelphia, Pennsylvania
10 October - 16 October 1999.
Join us for the world's largest

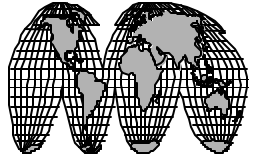




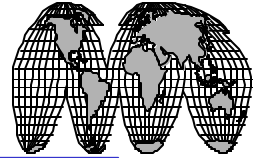
Globalization Advantages



- **Enhanced Leadership** - reach out to everybody to make them feel a part of the global project management community
- **Members and Markets** - expand the project management community (borderless)
- **Global Networking** - increase project management job opportunities
- **Increased Sources of Knowledge** - access to more project management experiences
- **Improve Personal Development** - enhance the potential for educational opportunities



Globalization Advantages



- **Better Sensitivity to Local Issues** - increased awareness of local issues
- **Economics** - greater growth and revenue opportunities
- **Promotion of the Profession Worldwide** - international recognition of the profession
- **Easier Acceptance of Global Certification, Research and Standards** - set the framework for global project management standards

Certification

PMP Certification

Total PMPs 10,086

(as of 31 December 1998)

Certified in 1998 3,671

Increase over 1997 233%

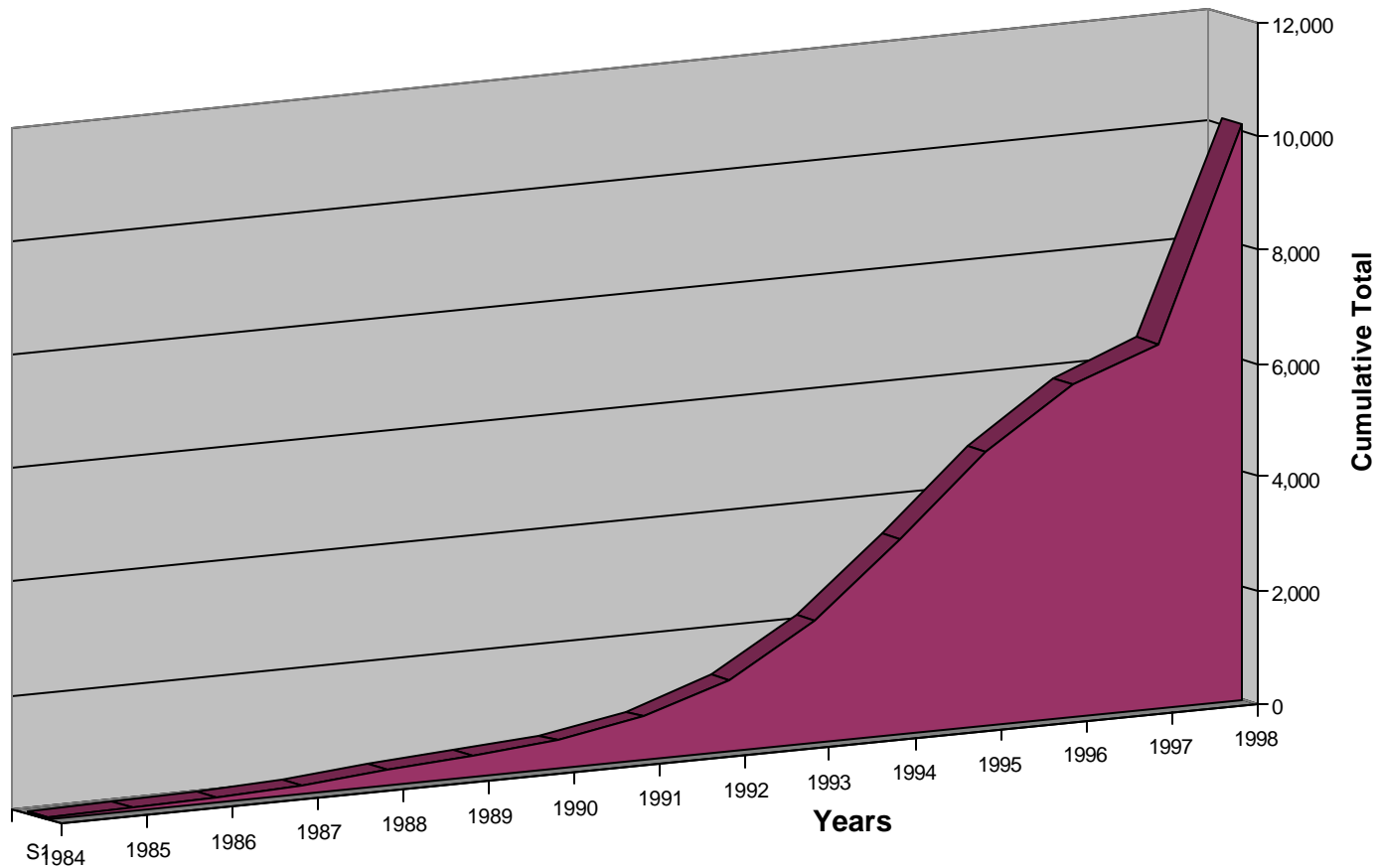




Certification



PMP Certifications





Certification



PMP® Certification Examination

- Administered in 40 countries
- Administered at 63 test sites
- Administered in 8 languages





Certification



PMP Professional Development Program

In order to maintain the PMP credential, individual PMPs must satisfy the Professional Development Program requirements (*administered by PMI's Education Department*)

- 3-year cycle
- 60 PDUs must be earned during this cycle
- Initiated 1 January 1999



Certification



Professional Development Unit Categories

PDUs must be attained in specific categories:

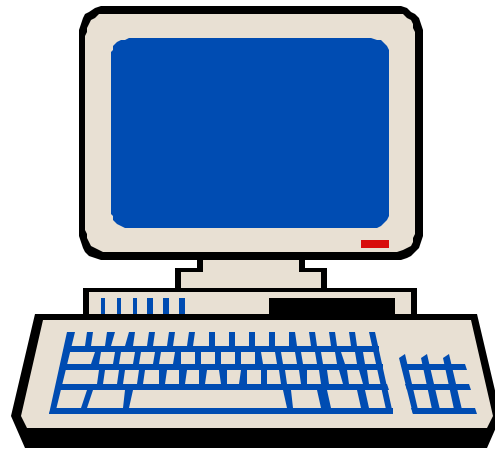
- Post certification formal education
- Self-directed learning and professional activities
- Programs sponsored by PMI Professional Development Providers
- Programs sponsored by other providers
- Service to professional/community associations



Certification



Plans for the year 2000 are to introduce the examination in a computer-administered format all over the world.





Research



Mission

To develop and maintain PMI
as a center for knowledge and wisdom
by accessing and assessing project
management's past and current states,
forecasting project management's future
state, and inspiring the direction of
project management research.



Research



Purpose

To assist in the creation and dissemination of project management knowledge valued by the profession, PMI members, the marketplace and other stakeholders by supporting the expansion of the body of knowledge, assessing the professional needs of practitioners, forecasting and assessing the future of the profession, and managing research projects supported by PMI or the PMI Educational Foundation



Research



Projects Underway in 1999

- Professional Needs Assessment
- Future of Project Management Forecast & Assessment
- Research Conference 2000
- Research Management Protocols
- Management of Specific Research Projects





Research



Additional projects or area of needs under consideration:

- Building a Research Database
- Advancing Research in Academia
- Establishing Research Consortia
- Increasing Research Project Support





Standards



Mission

To assist in improving the understanding and competency of experienced and new Project Management practitioners and customers worldwide.

To accomplish this, we will identify, define, document and champion generally accepted Project Management approaches and a common project management lexicon.



Standards



Purpose

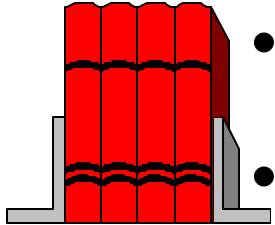
To develop standards for the Project Management profession that are valued by PMI members, the marketplace and other stakeholders.



Standards



Projects Underway in 1999



- *PMBOK™ Guide* Update
- *PMBOK™ Guide* Extensions in Information Systems and Construction
- Work Breakdown Structure Practice Standard
- Organizational Project Management Maturity Model



Standards



1999 Projects Continued:

- Project Taxonomy
- Project Manager Competencies
- Project Management Principles
- Maintenance of American National Standards Institute (ANSI) Accreditation.

The Future of PMI

**Membership in PMI
has grown at an annual
rate of over 25% for the
past three years.**





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E-Mail: pmihq@pmi.org • Internet: www.pmi.org



Rolling Wave #4 and IBR/EAC Kickoff

1 October 1998



SBIRS RW #4/EAC Schedule



| Task | October | November | December | January |
|--|-------------|---------------|-------------|---------|
| IPT Kick Off Meetings | 9/30 10/7 | | | |
| SPO Training | 10/8 | | | |
| IMS CCB'd and EAC Assumptions Reviewed | 10/15 | | | |
| CAMs Prepare RW#4 & EAC Documentation | 10/5 10/30 | | | |
| IPT Roll-up to 4th Level (Ground to STS Level 5) | | 11/2 11/4 | | |
| Prelim Prog Office App'l at 3rd Level | | 11/4 11/10 | | |
| IPT STS Sessions * | | 11/10 11/25 | | |
| STS AI Closure & EAC Agreements Reached | | 11/30 12/11 | | |
| Program Manager to Approve IPT EAC's | | | 12/7 12/18 | |
| Incorporate RW#4 and EAC into PMB | | | 12/7 1/15 | |
| IBR Outbrief | | | | 1/27 |

* IPTs to schedule STS dates



Scope and Schedule



Scope

- **SBIRS High EMD CLIN 0004 and CLIN 0010 including:**
 - D6c
 - G4/G5 impact to G1-G3
 - IMCSB contract change
 - TT&C contract change

Schedule

- **All of the above changes to be CCB approved into the IMS NLT 10/15**



Ground Rules and Instructions - 1 of 3



- **Detail planning required through FY99 or logical milestone completion**
- **EAC's to be updated for all cost accounts**
 - Time phased through contract completion by quarter or month
 - Must indicate that all IMS tasks are covered
 - Data to be rolled up to the 4th* level of the WBS
 - » HOSV, SEIT, Program Office to use common spreadsheet
 - » Ground Segment to use performance system data
- **IPTs must adhere to their fiscal funding targets**
 - Targets have been updated and provided separately
- **EAC assumptions must be documented and reviewed by Program Manager by 10/15**
 - Assumptions and EAC must be consistent with updated risk mitigation plans presented by SEIT on 10/2

* Ground Segment data at the 5th level of the WBS

- **Shoulder-to-Shoulder (STS) data required for each 4th* Level WBS as follows:**
 - Top level description (WBS Dictionary)
 - Top level schedule
 - Time phased planning covering all IMS tasks
 - Split between in-house, subcontract and material dollars
 - Explanation of why EAC is the same, better, or worse than history (CPI vs TCPI)
 - Description of key risks and how they are covered in EAC
 - Documented justification (basis-of-estimate) if one or more of the following criteria are met:
 - » Cumulative CPI < 0.98 or > 1.02 and effort is > 5% complete
 - » VAC • 2%
 - » EAC > \$10M
- Note: 1) NRE must be distinguished from recurring effort**
2) Pertinent cost account performance must not be masked

* Ground Segment to STS the 5th level of the WBS



Ground Rules and Instructions - 3 of 3



- **IPTs to schedule STS sessions with SPO, DCMC and Aerospace counterparts**
 - IBR Team Membership matrix attached
- **STS agreements and sign off at 4th* level of the WBS for all EAC's**
- **Program Manager approval required**
 - IPTs to summarize data at each 3rd level WBS
 - Impact to Funding Scorecard must be analyzed and approved
 - Program Manager maintains the right to challenge any EAC



IBR Team Membership - 1 of 5



| WBS | Description | IPT Lead | CAM | CAM Phone # | SPO Counterpart |
|-------------|---|---------------|----------------|----------------|---------------------|
| 0000 | SBIRS High Component | Tony Tuffo | | (408) 742-3732 | Col. Gomez |
| 1XXX | High Orbit Space Vehicle | Bob Baker | | (408) 742-0802 | Lt. Col. Rosensteel |
| 11XX | Integr,Assy,Test & Check (IAT&C) | Dave Parsons | | (408) 743-7072 | Capt. Toso |
| 1110 | HOSV Management & Bus Ops | | John Finneran | (408) 743-0098 | Capt. Toso |
| 1120 | HOSV Specialty Engineering | | Jon Burgess | (408) 756-4678 | Capt. Toso |
| 1130 | Design Integration | | Bruce Steakley | (408) 743-0151 | Capt. Toso |
| 1140 | Assembly & Test | | Alan Brown | (408) 742-2757 | Capt. Toso |
| 1150 | Payload Subcontract Management | | Bruce Steakley | (408) 743-0151 | Maj. McMurry |
| 12XX | GEO Payload | Sabby Sabnis | | (626) 812-2110 | Maj. McMurry |
| 1210 | Payload IAT&C | | Terry O'Brien | (626) 812-2129 | Maj. McMurry |
| 1220 | Optical Telescope | | Phil Simpson | (626) 812-1166 | Lt. Hunt |
| 1230 | Pointing & Control | | Mike Roller | (408) 742-4576 | Capt. Hughes |
| 1240 | Focal Plane Assembly | | Rick Ross | (410) 765-3126 | Lt. Hunt |
| 1250 | Thermal Control Subsystem | | Dave Wilson | (626) 812-1728 | Lt. Hunt |
| 1260 | Signal Processing Assembly | | Mark Loring | (626) 812-8248 | Capt. Hughes |
| 1270 | Power & Signal Distribution System | | John Voboril | (626) 812-1716 | Capt. Hughes |
| 13XX | GEO Spacecraft | Paul McDonald | | (408) 756-2738 | Capt. Cruciani |
| 1310 | Spacecraft Bus Ops | | John Finneran | (408) 743-0098 | Capt. Cruciani |
| 1320 | Structures & Mechanisms | | Bob Gardner | (408) 743-2184 | Capt. Cruciani |
| 1330 | Thermal Control | | Jeff Fetherolf | (408) 743-7090 | Capt. Cruciani |
| 1340 | Electrical Power | | Ray Murdock | (408) 743-7227 | Capt. Cruciani |
| 1350 | Guidance, Navigation & Control | | Steve Wolff | (408) 756-0994 | Capt. Cruciani |
| 1360 | Flight Software | | Rod Gibb | (408) 756-1292 | Capt. Cruciani |
| 1370 | Command & Data Handling | | Lou Deaton | (408) 742-8236 | Capt. Cruciani |
| 1380 | Communications Products | | Taffy Curtin | (215) 497-4161 | Capt. Cruciani |
| 1390 | Propulsion | | Gary Stevenson | (408) 743-7133 | Capt. Cruciani |



IBR Team Membership - 2 of 5



| WBS | Description | IPT Lead | CAM | CAM Phone # | SPO Counterpart |
|-------------|------------------------------------|--------------|---------------|----------------|-----------------|
| | | | | | |
| 14XX | HEO Payload | Sabby Sabnis | | (626) 812-2110 | Maj. McMurry |
| 1410 | Payload IAT&C | | Terry O'Brien | (626) 812-2129 | Maj. McMurry |
| 1420 | Optical Telescope | | Phil Simpson | (626) 812-1166 | Lt. Hunt |
| 1430 | Pointing & Control | | Mike Roller | (408) 742-4576 | Capt. Hughes |
| 1440 | Focal Plane Assembly | | Rick Ross | (410) 765-3126 | Lt. Hunt |
| 1450 | Thermal Control Subsystem | | Dave Wilson | (626) 812-1728 | Lt. Hunt |
| 1460 | Signal Processing Assembly | | Mark Loring | (626) 812-8248 | Capt. Hughes |
| 1470 | Power & Signal Distribution System | | John Voboril | (626) 812-1716 | Capt. Hughes |
| | | | | | |
| A300 | HOSV Flight S/W DME & Data | | Dave Parsons | (408) 743-7072 | Capt. Toso |
| | | | | | |
| E100 | Planning & Preparation | | Dave Parsons | (408) 743-7072 | Capt. Toso |
| E300 | Transfer & Transportation | | Dave Parsons | (408) 743-7072 | Capt. Toso |



IBR Team Membership - 3 of 5



| WBS | Description | IPT Lead | CAM | CAM Phone # | SPO Counterpart |
|-------------|---|------------------|--------------|----------------|------------------------|
| | | | | | |
| 3XXX | Grd Cmd,Cntrl,Comm & Mssn Eq | Colleen McFadden | | (303) 581-4428 | Lt. Col. Vanderpoorten |
| 3110 | Business Ops | | Watkins | (303) 581-4835 | Schaub(I1)/Wallace(I2) |
| 3120 | Seg Engineering | | Kile | (303) 581-4385 | Schaub(I1)/Wallace(I2) |
| 3130 | ILS Spec Engineering | | Kile | (303) 581-4385 | King |
| 3140 | Seg I&T | | Marques | (303) 581-4424 | Schaub(I1)/Wallace(I2) |
| 3150 | CDF | | Marques | (303) 581-4424 | Schaub(I1)/Wallace(I2) |
| | | | | | |
| 3210 | MCS IAT&C | | Packard | (303) 581-4342 | Schaub(I1)/Wallace(I2) |
| 3220 | MCS Equipment | | Kramer | (303) 581-4518 | Schaub(I1)/Wallace(I2) |
| 3230 | TT&C SI | | Clary | (303) 581-4594 | Schaub(I1)/Wallace(I2) |
| 3240 | Mission Proc | | Catuara | (626) 812-1463 | Schaub(I1)/Wallace(I2) |
| 3250 | Mission Mgmt SI | | Carpenter | (303) 581-4473 | Schaub(I1)/Wallace(I2) |
| 3260 | SVS INFRA SI | | Gibson | (303) 581-4302 | Schaub(I1)/Wallace(I2) |
| | | | | | |
| 3300 | MCS-B | | Packard | (303) 581-4342 | Schaub(I1)/Wallace(I2) |
| | | | | | |
| 3400 | Surv Backup | | Bloom | (303) 581-4388 | Schaub(I1)/Wallace(I2) |
| | | | | | |
| 3510 | RGS IAT&C | | Fred Burgess | (303) 581-4240 | Schaub(I1)/Wallace(I2) |
| 3520 | RGS Equipment | | Fred Burgess | (303) 581-4240 | Schaub(I1)/Wallace(I2) |
| 3530 | RGS Antenna | | Fred Burgess | (303) 581-4240 | Schaub(I1)/Wallace(I2) |
| | | | | | |
| 3600 | RT | | Hinds | (303) 581-4448 | McKay |



IBR Team Membership - 4 of 5



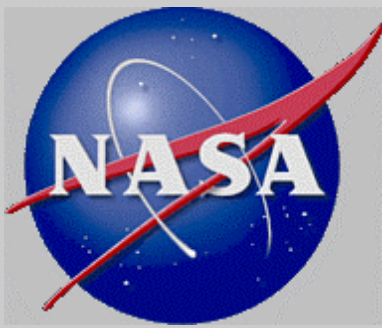
| WBS | Description | IPT Lead | CAM | CAM Phone # | SPO Counterpart |
|------|-------------------------|----------|--------------|----------------|-----------------|
| 6100 | Tech Pubs | | Kile | (303) 581-4385 | King |
| 8000 | CSI | | Marques | (303) 581-4424 | King |
| 9100 | MCS/MCSB Spares | | Kile | (303) 581-4385 | King |
| 9200 | RGS Spares | | Fred Burgess | (303) 581-4240 | King |
| A100 | SW DP Depot | | Kile | (303) 581-4385 | King |
| B100 | Training Equipment | | Barrios | (303) 581-4566 | King |
| B200 | Training Services | | Barrios | (303) 581-4566 | King |
| B300 | Training Facilities | | Barrios | (303) 581-4566 | King |
| D110 | Site Activation | | Bloom | (303) 581-4388 | King |
| D120 | MCS Facility/Activation | | Bloom | (303) 581-4388 | King |
| D130 | RGS Facility/Activation | | Fred Burgess | (303) 581-4240 | King |
| D200 | P-Ops Support LMFSC | | Kile | (303) 581-4385 | King |



IBR Team Membership - 5 of 5



| WBS | Description | IPT Lead | CAM | CAM Phone # | SPO Counterpart |
|-------------|------------------------------------|--------------|-----------------|----------------|---------------------------|
| 41XX | System Engineering | Mark Crowley | | (408) 756-0969 | Maj. Watson |
| 4110 | Management & Business Operations | | Julie Foster | (408) 743-7387 | Maj. Watson |
| 4120 | Software Process Management | | Tom Kelley | (303) 581-4226 | Maj. Wallace |
| 4130 | Reqmts, Analysis, Alloc & Verif | | Chris King | (408) 742-2002 | Maj. Chang/Mr. Markle |
| 4140 | Sys & Mssn Afford/Util Analysis | | Theresa Ito | (408) 742-6246 | Maj. Scruggs |
| 4150 | Systems Integration | | Gary Montgomery | (408) 743-1815 | Lt. Col. Stephen |
| | Systems I/F & Transition | | Les Nelson | (719) 550-2246 | Maj. Falkenstein |
| 4160 | Specialty Engineering | | Jon Burgess | (408) 756-4678 | Maj. Bob King |
| 4170 | Integrated Logistics Support | | Jon Burgess | (408) 756-4678 | Maj. Bob King |
| 4180 | Launch System Integration | | Gary Montgomery | (408) 743-1815 | Capt. Toso/Capt. Cruciani |
| | | | | | |
| 4300 | Tot Sys Perf Responsibility (TSPR) | | Dave Chisessi | (408) 743-2183 | Maj. Watson |
| | | | | | |
| 5100 | Sys Dev Test & Evaluation (DT&E) | | Mike Byrne | (408) 742-3855 | Mr. Masternak |
| | | | | | |
| C100 | Launch Operations | | Mike Byrne | (408) 742-3855 | Capt. Toso/Capt. Cruciani |
| C200 | Flight Operations Support | | Mike Byrne | (408) 742-3855 | Capt. Toso/Capt. Cruciani |
| | | | | | |
| 42XX | Program Management | Kent Haeger | | (408) 742-0584 | Lt Col. Stephen |
| 42XX | Program Management | | Reneé Cintas | (408) 756-2158 | Lt. Grant |
| 4230 | EDAMS | | Rick Smith | (408) 742-5459 | Mr. Tatum |
| | | | | | |
| 6200 | Engrg, Mgmt & Sppt Data | | Reneé Cintas | (408) 756-2158 | Lt. Grant |



A Historical Perspective on Integrated Baseline Reviews at NASA JSC

Ralph Schomburg

J. Greg Smith

Sam Padgett

CPM 15th Annual International
Conference



International Space Station Baseline Review Process

Early Activities

- **International Space Station - Appr. \$5.6B Cost Plus Prime Contract**
- **Statement Of Work Co-Developed Through Partnered IPT Process**
- **Much Of The Work Was At The Three Product Groups -**
 - **Boeing Huntsville**
 - **Rocketdyne Canoga Park**
 - **McDonnell Douglas Huntington Beach**
- **Shortly After Definitization The Need Was Seen For Baseline Implementation Review**



International Space Station Baseline Review Process

Need For Baseline Review

- **High Change Traffic**
- **Final Negotiation of Major Subcontracts (Products Groups)
90% of Budget**
- **Evidence of Excessive LOE and Poor Earned Value Techniques**
- **Pressure From Outside Organizations To Treat EV And
Baseline Process With Rigor (OIG, GAO, DCAA, NASA HQ)**



International Space Station Baseline Review Process

Preparation For Review

- **Thorough Review Of Published WBS Dictionary and SOW**
- **Boeing Reviews Led By NASA Team, MDAC and Rocketdyne
Reviews Led By Boeing**
- **Training Project Engineers In EV Techniques And Review
Process**
 - ▣ **5 Day Class With Final Exam**
 - ▣ **Mock Interviews On Sample CAM Notebook**
- **Review Team From All Parts Of Project Discipline**
- **Review Of Delivered EV Reports**
- **Coordination Of Outside Participants**



International Space Station Baseline Review Process

Baseline Review - Approach & Goals

- **CAM And Functional Manager Interviews To Verify:**
 - □ **Baseline Implementation, Budget Appropriateness, And Consistant Budget / Schedule Phasing**
 - **Proper System Operation and Use**
 - **Performance Data Validity**
 - **Technical Problem Identification, Resolution, and Monitoring Ability**



International Space Station Baseline Review Process

Baseline Review - Approach & Goals, Cont'd

◉ **Conduct Schedule Traces To Verify:**

- **The Whole Project Has Been Properly Scheduled**
- **That A Scheduling System Is Operational**
- **The Company Understands The Importance Of Schedule Management**
- **Implemented Schedule Represents Customer's Baseline Expectations**
- **Schedule Review Conducted At The System Level And Within Each CAM Interview**



International Space Station Baseline Review Process

Baseline Review - Approach & Goals, Cont'd

- **Conduct Data Traces, To Verify:**
 - **The Performance Data Is Accurate, Auditable, And Timely**
 - **The Performance Data is Used By The Company To Manage**



International Space Station Baseline Review Process

Review Execution - Results

- **Gaps Between Government Expectations And Implemented Control Account Plans**
- **Many Areas The Contractor Implemented As LOE Should Be Measured**
- **Significant Financial Risk Discovered In Implemented Control Accounts**
- **Poor (Creative) Earned Value Techniques**
- **Cultural Disdain For Participation In The EAC Update Process**



International Space Station Baseline Review Process

Most Significant Positive Results

- **Great Increase In The "Common" Understanding Of The Baseline**
- **Early Identification Of Program Risks**
- **Favorable GAO Review Of Implemented Earned Value System**
- **Increased Project Office Utilization And Understanding Of EVM**
- **Developed Partnering With DCMC And Boeing For Post Review Surveillance Activities**



The Recent EVM Environment at NASA JSC

- JSC has used EVM sparingly for many reasons
- But LOE is fading
 - Fewer people for oversight
 - Better, faster, cheaper generally means more emphasis on planning phase
 - Major agency initiative to use Performance-based contracts
- IBRs are increasingly attractive to the technical community



Some Recent Experience With IBRs

- Mars In-Situ Propellant Production (ISPP) Precursor (MIP) Flight Demonstration experiment
- Three small (C/SSR) contracts for support to JSC's medical sciences community

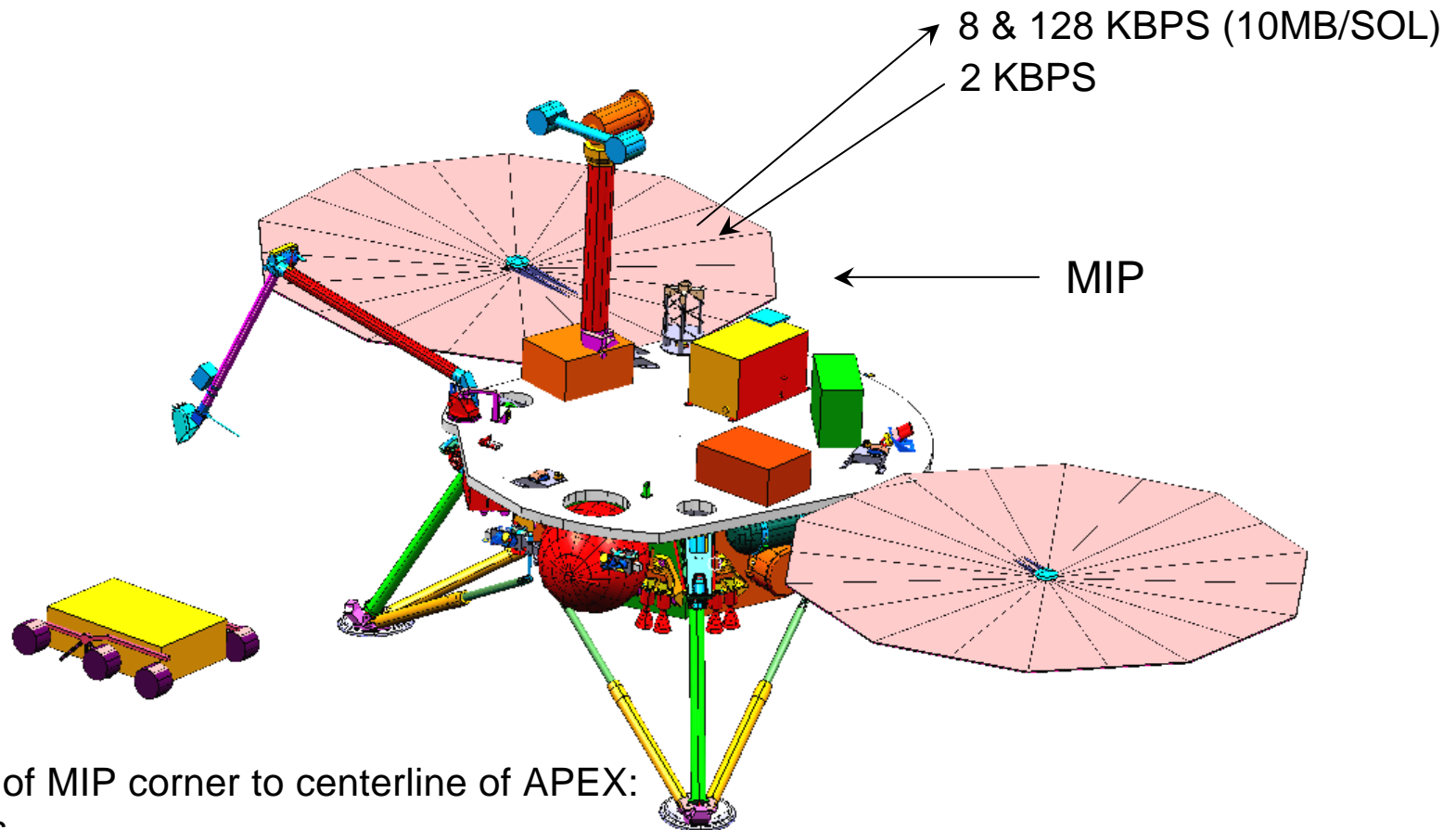


MIP

- Mars In-Situ Propellant Production (ISPP) Precursor (MIP) Flight Demonstration experiment
 - An experiment payload on the 2001 Mars Lander spacecraft
 - **Primary Objective:**
 - (1) Acquire and compress Martian atmospheric CO₂ **and** produce pure O₂ from that carbon dioxide.
 - **Secondary Objectives:**
 - (2) Identify optimal solar arrays for future power systems on Mars.
 - (3) Design radiators for future long-term operation on Mars.
 - (4) Mitigate long-term deposition of airborne dust onto solar array surfaces.
 - (5) Conduct long-term operations on Mars.
 - Three NASA centers (JSC, GRC and JPL), Universities and Contractors



LANDER CONFIGURATION ON MARS



Distance of MIP corner to centerline of APEX:
16 inches

Height of APEX above the MIP top surface:
37.6 inches



MIP (Continued)

- History
 - Initiated in 1996
 - \$9M with very high visibility
 - Early performance characterized by increasing cost estimates
 - Integration activities were more complex than original plan
 - Baselines not tightly controlled
 - Project team restructure -- Summer 1998
 - New PM wanted to understand situation
 - Requirements review
 - Fresh ETC
 - IBR format suited their needs



MIP Baseline Reviews

- Preparation
 - Training session for project team (~ 2 hours)
 - Letter to each experiment lead
- Conduct
 - ~2 hours long
 - Face-to-face or by ViTS for remote experiments
 - Weaknesses became action items
 - Repeat



Medical Operations and Research Support

- Support to JSC's medical sciences community
 - History
 - Follow-on to 25-years of LOE support
 - Planning was limited to a single fiscal year
 - The contractor is local -- No EVM experience
 - Run mostly by MDs and PhDs
 - EVM requirement surfaced in about 1995
 - Single procurement restructured and broken into three
 - Actual start date -- 2/97



Medical Operations and Research Support (Cont)

- Medical Support and Integration Contract (MSIC) -- Support to Medical Sciences Division
 - Flight crew health care
 - General
 - On-orbit
 - Medical sample acquisition and analysis (neuroscience, environmental physiology, bone & muscle, etc.)
 - Lab M&O
 - Required criteria compliance
 - \$54M



Medical Operations and Research Support (Cont)

- Biotechnology Contract
 - Cell Science research
 - No EVM requirement
 - \$37M
- Flight Hardware Contract -- Devel. and fab. of health-related equipment used on-orbit
 - Diagnostics (Doppler blood flow, etc.)
 - Exercise physiology (treadmills, etc.)
 - Crew Health Care System for ISS
 - No EVM requirement
 - \$21M



Medical Operations and Research Support (Cont)

- Early Post-award
 - Restructure -- C/SSR for all three contracts
 - The dialog:
 - Contractor: “Finance bought a tool -- are we ready, now?”
 - NASA technical customer: “Yes, let’s get this IBR out of the way.”
 - Training for contractor and NASA
 - Conduct IBR